CARFFR ALFRT:

GLOOMY OUTLOOK

The good life of IT workers is about to crash for those who can't



SEEKING SECURITY

Good security chiefs are so rare that it takes companies extra time



HOMEGROWN TALENT

Smart companies breed their own talent by training nontechies for



CIO KURT WOETZEL says The Bank of New York still has to convert from batch processing to continuous processing. In all. such conversions will cost the industry \$3.3 Mion of T+1's estimated \$8 billion price tag

THE SECURITIES INDUSTRY HAS BEEN BUFFETED BY A CONSTANT SERIES OF challenging IT projects: preparing its systems for the euro, Y2k, online

trading, decimal stock prices - and now T+1. T+1 means trades have to be settled in one day instead of three, and that means the end of batch processing, reports Maria Trombly. The cost? Try \$8 billion, several billion more than the industry spent on Y2k. Story is on page 20.



OLDER SYSTEMS HINDER E-PAYMENTS

Costly methods under review by lawmakers

BY PATRICK THIBODEAU

For Supervalu Inc., a food dis-

tributor and operator of some 500 retail stores, developing alternative electronic-payment systems has become a bottomline issue.

If its customers use credit or debit cards to make purchases,

Supervalu often must pay a transaction fee that can wipe out a "razor-thin" margin on a small sale, said Jacki Snyder, manager of electronic payments at the Eden Prairie, Minn.-based company. "In some cases, the fees on one grocery order exceed \$1, more than the supermarket profit on the same order," she said.

The example highlights one of the problems involved with electronic payments that were outlined last week by Snyder and other financial service experts before the U.S. House Subcommittee on Domestic and International Monetary

Payment, page 16

MICROSOFT MAKES BID FOR ENTERPRISE

Launch of high-end operating system and .Net enterprise servers takes aim at Unix

BY CAROL SLIWA

Microsoft Corp. tomorrow will stage its Enterprise 2000 Launch, laying the final colossal bricks for the Windows 2000 foundation that it has been building to challenge high-end Unix systems.

But no matter how many impressive hardware partners, customers and benchmark performance numbers the company trots out in San Francisco, it will face a tough challenge winning over corporate users who have grown increasingly skeptical of Microsoft's reliability and scalability claims, several analysts said.

Microsoft may have a greatly improved operating system in Windows 2000 Datacenter Server and a well-integrated family of enterprise servers and tools on which to build its .Net strategy. But analysts predicted that users won't rush to rip out their Unix boxes.

"You've got to have a compelling reason [to switch]. I could think all day and all night, and I'm not sure I could come up with a good functional reason," said Randy Richard-Microsoft, page 129

But analysts question lack of timely tire data

BY BOB BREWIN AND DAN VERTON

Faced with mounting consumer complaints and intense media coverage of a series of accidents and deaths caused by rollovers of its Explorer sport utility vehicles, Ford Motor Co. established a high-tech "war room" at its headquarters Ford, page 129

INSURER ROLLS OUT WIRELESS ACCESS

Struggled with language but kept project in-house

After a crash development project, The Progressive Corp. last week announced that it's starting to offer wireless Web access to holders of its auto insurance policies.

Progressive, the fourth-largest automobile insurer in the U.S., with more than 8 million

Wireless, page 16

Making Claims

Notable aspects of Progressive's wireless application:

- . Developed in-house using Wireless Markup Language
- Can be accessed through any type of wireless Web-enabled r
- Works on any cellular network in
- Provides customers with fast access to claims reps and account infor
- **Wireless payment module**

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CLEAR COMPUTING

Apple Computer has a "clear" vision of the way computer hardware should look and operate and isn't afraid to break

out of existing molds. Reviewer Tom Thompson looks at the new Power Mac 64 Cube, likes what he sees - and doesn't see - then puts a demanding workload through it. Page 92





OH, THE HUMANITY!

When developing disaster recovery plans, businesses need to remember their most important resource: employees. If they and their families aren't taken care of, there won't be anyone around to run the business when disaster does strike, warn consultants. Page 48

COMPUTERWORLD

SEPTEMBER 25, 2000

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- 6 BOEING LAUNCHES at marketplace with Lockheed Martin and others, hoping to cut purchasing costs by 27%,
- 8 ARIBA DEBUTS a slew of e-market features, packaging auctions and integration.
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- 14 OPTICAL FIBER SAVES money compared with copper, a new study claims.
- 16 WIRELESS LANS mature, as host of products ship ready-made with radio network connections.
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- its various businesses. **57 THE FUTURE** looks grim, according to predictions of what the workplace will be
- like in the next few years. **62 TALENT IS** in short supply and in high demand on the security executive hiring scene.
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ONLINE

As IT professionals interact with more people inside and outside corporations, recruiting for behavior can become as important as — and in some cases even more important than — technical savvy. Gartner Group's Barbara Gomolski offers hiring advice on our Workforce Watch page.

On Computerworld.com, we unveil our latest research section. IT Reports, offering access to white papers and analysts' reports on everything from business processes to wireless applications. http://itreports.computerworld.com

In our E-Commerce Community, reader Joe Reinhardt laments the loss of privacy in the cyberage, www.computerworld.com/ecommerce

Do you work with someone you think is truly an IT leader? You can nominate your colleague for next year's Premier 100 awards.

100 awards. www.computer world.com/ nominatep100



OPINIONS

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says any company seeking an IT superman is asking for more trouble than it already has.

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believes the laptop's days are numbered.

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wireless technology in the workplace.

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- 130 FRANK HAYES offers a list of IT things that remain true, despite what vendor representatives, industry analysts and pundits say.

AT&T Labs to Close San Jose Facility

AT&T Labs will close its San Jose facility and lay off the approximately 40 employees there, the company said last week. Spokesman Mike Dickman said the operation involves a single development team, whose members have the option to transfer. The company decided to close the site because it isn't focused on an area of current interest, he said.

Veterans Records Found Vulnerable

The information systems controls at the U.S. Department of Veterans Affairs were faulted by the agency's own inspector general, who told the House Committee on Veterans Affairs last week that testing on benefits records found them vulnerable to unauthorized access. Among the problems was a lack of strong passwords by end users. The VA is upgrading its systems and plans to spend about \$1.4 billion on information technology initiatives.

Protocol Aims to Buoy Wireless Content

Sun Microsystems Inc., in conjunc tion with several nartners, last week announced a new Java-based protocal to bolster content on wireless devices. Sun said its Mobile Information Device (MID) profile will enhance personal access to content such as local weather and stock quotes on wireless devices with enhanced features. The open-source, standards-based protocol will work for any device programmed with the MID profile. Some 20 companies helped create the profile.

New ASP Taps Giants

Technologies and services from Microsoft Corp., IBM, Arthur Andersen LLP in Chicago and Avaya Inc. in Basking Ridge, N.J., will power Enfrastructure Inc., a newly created application and infrastructure provider with more than \$100 million in funding, Aliso Vieio, Calif.-based Enfrastructure will provide software, hardware, network hosting and human resources services from 25 campuses worldwide.

DEADLINE Bank One's Wingspan Fails to Take Off Online

Internet-only bank the latest to seek real-world anchor in parent company

LUECKE: Wingspan

is "weak right now"

BY MARIA TROMBLY

ANK ONE Corp.'s WingspanBank.com, a stand-alone, Internet-only bank, will be downgraded to a test lab because it didn't attract enough customers, bank offi-

Wingspan joins a host of other banks launched

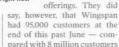
exclusively online that have had to move closer to their real-world sponsors or partner with other entities to survive. Most recently, Citibank closed down its online-only bank.

Internet plays are having a hard time getting off the ground," said Bank One Executive Vice President Bruce Luecke, "It's harder

to make deposits. It's harder to make withdrawals." He declined to detail the online bank's fortunes other than to say, "It's weak right now."

When Wingspan was first launched in June of last year, bank officials said they would spend between \$100 million and \$150 million on the ven-

ture. Chicago-based Bank One hasn't made any further statements about its investment, and officials refused to comment on how much it would cost to fold Wingspan back into Bank One's online



at Bank One, more than 600,000 of whom used Bank One's online services.

Bank One will use Wingspan as a test lab for online banking products, such as a pilot program in which Wingspan customers can open their accounts at Bank One branches. Currently, Wingspan customers have to mail in deposits or use electronic transfers.

High Expectations

Other Internet-only banks have also learned their lessons. New York-based Citibank recently decided to close its online-only bank, Citi f/i, and merge it with Citibank.com, the online version of its physical bank

And last spring, Palo Alto, Calif.-based ETrade Group Inc. bought the nation's largest independent network of centrally managed automated teller machines, Portland, Ore.based Card Capture Services Inc., which had a total of 8,500 machines. The purchase came shortly after ETrade purchased Telebank, a leading onlineonly bank.

Some Internet banks have decided to partner with offline firms. VirtualBank, a wholly owned subsidiary of 1stVirtual Inc. in Palm Beach Gardens, Fla., struck deals with three companies and will put physical branches in or near the companies' headquarters to provide banking services to their employees. Internet-only banks are targeting other niche groups as well.

But Wingspan's failure to take off may just mean its founders expected too much, said George Barto, an analyst at Gartner Group Inc. in Stamford, Conn. For example, Barto said, NetBank Inc. in Alpharetta, Ga., has reached \$1.5 billion in assets in more than 110,000 accounts - and boasts nine consecutive profitable quarters.

NetBank picked a niche people who wanted an Internet-only bank - and stuck to its plans, he said, which made the bank successful. "The failure of Wingspan was [the result of] the expectations of its parent company," he said. "They wanted a million accounts, and that wasn't realistic."

Navy to Award \$12B-Plus Intranet Contract

After nine months and a halfdozen congressional hearings. the U.S. Navy this week will award one of the most contentious and complex outsourcing deals in history.

Navy officials last week told Computerworld that the service will award the long-awaited Navy/Marine Corps Intranet (N/MCI) contract early this week. The eight-year contract, valued at between \$12 billion and \$16 billion, has been labeled by some as the largest outsourcing deal in the world, and one that represents a sea change in the role of private industry in government.

Naval sources have repeatedly identified Computer Sciences Corp. in El Segundo, Calif., as the top contender for the contract. However, other industry notables vying for the deal are Electronic Data Systems Corp. in Plano, Texas, General Dynamics Corp. in Falls Church, Va., and IBM.

N/MCI is designed to replace dozens of Navy and Marine Corps networks with a centrally managed, contractorrun intranet. Naval officials claim that N/MCI is necessary for the service to make use of new technologies and fight the battles of the future more effectively.

Formidable Challenge

Officials also said the intranet will enhance security by cutting down on the number of disparate networks, security flaws and back doors. Work on N/MCI will begin Oct. 1.

N/MCI is a complex "seat management" pact that will require the Navy to transfer tacit ownership of its information technology assets to a commercial contractor. The Navy will then purchase IT services as a utility, similar to the purchase of phone services.

The Navy would have need

ed \$3 billion per year to upgrade all its IT assets on its own, according to Ron Turner, the Navy's deputy CIO for infrastructure, systems and technology

But the budget couldn't support that, so the Navy asked industry to share in the investment and agree to spread the costs. In addition, the winning vendor will give the Navy credit for all existing infrastructure that can be used as part of N/MCI.

The Navy also plans to offer the contractor dollar incen-

tives for network uptime, enhanced security and performance. Likewise, there will be penalties for poor performance and security lapses. Turner said.

However, some industry analysts said they're skeptical about N/MCI's future.

Chip Mather, a senior vice president at Acquisition Solutions Inc., a federal procurement consulting company in Chantilly, Va., said the two biggest challenges N/MCI faces are actual deployment and achieving the advertised savings and efficiencies.

"To date, seat management has, at best, been a mixed bag in the government," said Mather.

Navy/Marine Corps Intranet

Contract: Five years (three-year option) for as much as \$16B Users: As many as 350,000 Navy and Marine users aboard ships and at hundreds of bases around the world

Service-level agreements: There are 44 such agree ments that the vendor must meet or it will risk financial penalties and even contract termination.

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Aerospace/Defense Exchange Could Take Flight This Month

Exostar could affect buying patterns throughout the industry

BY MARC L. SONGINI

NEW ONLINE exchange founded by aerospace industry power-houses The Boeing Co., Raytheon Co., Lockheed Martin Corp. and BAE Systems is due to go live this quarter, possibly as soon as month's end.

Because of the purchasing power and prominence of Boeing in the aerospace industry, this exchange could have a ripple effect, squeezing out cost and affecting buying patterns throughout the entire industry, said Joshua Greenbaum, an analyst at Enterprise Applications Consulting in Berkeley, Calif.

No doubt, that's what Exostar's partners want, he said.

"It will have a major effect in how we do business and in the market's supply chain," said a spokesman at Bethesda, Mdbased Lockheed Martin.

Seattle-based Boeing and Pleasanton, Calif-based soft-ware vendor Commerce One Inc. last week announced that they have successfully completed a test drive for linking Boeing's trading partners to Washington-based Exostar Inc. aerospace and defense business-to-business exchange.

Aiding Smaller Suppliers

The exchange could prove advantageous to smaller suppliers that will now have one way of linking to many different customers — instead of having a different set of applications for each buyer, he said.

Lockheed Martin is in ongoing discussions with the U.S. Department of Defense to see if the government will sign on as a buyer. The Exostar partners shared details of the exchange at Commerce One's user conference in Las Vegas.

Exostar — first announced in March by Boeing, Lockheed Martin, Lexington, Mass.-based Raytheon and U.K.-based BAE Systems — will let suppliers using electronic data interchange (EDI) technology connect to buyers via a service from Gaithersburg, Md-based GE Global eXchange Services that translates EDI transmissions into an XML format.

The exchange is expected to offer a variety of services, including auctioning, purchase forecasting and the ability to issue electronic payments and receipts.

Such an exchange is particularly significant in an industry like aerospace/defense, where half of the final product initially arrives at the Boeing or Lockheed Martin factory as dozens of separate components awaiting assembly, according to spokesmen from both companies.

Boeing alone buys \$37 billion worth of goods each year and is now looking to reduce the administrative costs of its purchasing operations by as much as 27%; Lockheed buys \$13 billion in supplies and hopes to see a 10% reduction in costs.

High Hopes

While there are no specific suppliers signed on yet, Boeing said it has high hopes for Exostar. A spokesman said the company eventually plans to tie its enterprise resource planning system and other back-office applications to the exchange in an attempt to realize even greater supply-chain efficiencies.

On the Horizon The aerospace/defense in-

dustry is in line to get a new exchange, called Exostar, which could revamp its supply-chain infrastructure. Exostar's major partners include Boeing, Lockheed Martin, Raytheon and BAE Systems, which have a combined \$71 billion in procurement spending and 37,000 suppliers. Exostar will use software and services from Commerce One and GE Global eXchange Services. The industry represents a total

of \$400 billion in annual

procurement spending.

The exchange could also help give Boeing the edge against global competitors such as the massive Airbus Industrie in France, analysts said.

Boeing already operates several private exchanges, but Exostar is expected to be the largest, most accessible electronic marketplace in the defense/aerospace industry.

Interestingly, the industry has been rather slow to move to such a comprehensive exchange, said Craig Schmitman, editor of AeroSpaceNews.com, an online news service in Oiai Calif.

Boeing takes slow but firm steps when deciding which technological direction to take, and then moves aggressively to implement what it has chosen, Schmitman said, "[but] clearly, they're a believer in business-to-business-e-commerce."

MORETHIS ISSUE

For more about business-to-business e-commerce, see page 8.

Dell Marketplace to Enable Custom Pitches

Exchange will give largest corporate accounts access to millions of users

BY JULIA KING

Dell Computer Corp. next month plans to launch an electronic business-to-business marketplace that will let its largest corporate customers hone in on Dell's millions of

users, employing customized sales

For example, an electronics supplier selling projectors on the exchange might list product benefits such as "light-weight" and "high image quality" for a less-sophisticated buyer but display all of the technical specifications for a buyer who identi-

fies himself as an engineer.

"We've built in technology at
the marketplace to identify the
customer and pass that on to

the supplier," which can then

give that customer a personal-

ized buying experience, said John Hampton, director of new ventures at the Round Rock, Texas-based computer company.

The ability to laser-focus on specific sets of customers is

one of the Dell exchange's key advantages, suppliers said. Most other marketplaces, in contrast, allow only for posting static product catalogs, which all customers, regardless of their size or industry, see the same way.

This "virtual showroom" capability is provided via Austin, Texas-

based Exterprise Inc.'s Active-Market software, which is embedded in the Dell exchange. 3M Co.'s Office Ergonomics products will be the first to use this capability. "We can't get any more targeted with our ergonomic products," said Paul Mullaney, 3M's office supplies division e-business manager. 3M is one of three companies, along with Pitney Bowes Inc. and Motorola Inc., involved in a pilot test of the marketplace, which is due to go live at the end of next month.

"This is a tremendous opportunity for us to market to known computer users," Mul-

The Dell exchange differs from countless other businessto-business exchanges for office supplies in that suppliers and buyers can execute online transactions according to predefined trading rules.

On the buy side, the new Internet exchange, www.dell marketplace.com, is tailored to small and medium-size companies, which large companies typically reach through more expensive means, such as direct salespeople, or not at all.

"The Dell Marketplace is like a mall. Dell is the mall owner, and we're allowing our customers to open up stores behind us," said Hampton. Initially, Dell will charge transaction fees for each order executed on the exchange, but these fees will be phased out as the exchange offers more value-added services for which it can collect other fees, said Hampton.

Looking forward, Dell plans to incorporate credit scoring and finance services into the marketplace. It will also offer systems integration services, such as helping suppliers create electronic catalogs and, eventually, linking regular trading partners' internal enterprise systems through the marketplace.

The Next Phase

"We believe the next phase will be interconnected business networks connecting internal processes within a business to each other, such as connecting the finance organization of one company to another's to do accounts payable and accounts receivable processing." Hampton said.

David Yockelson, an analyst at Meta Group Inc. in Stamford, Conn., said the Dell marketplace offers a "complete net market operating system" for buyers and suppliers to trade complex, branded products and services online.



targeted with our ergonomic products," says 3M's Mullaney

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BRIEFS

Surge Expected in Holiday Web Shopping

Consumers will spend an estimated \$12 billion online this holiday season, up from \$7 billion last year, according to Jupiter Communications Inc. The New York-based research firm attributes the increase to shoppers buying more holiday gifts online and to predictions that 6 million Internet users will make their first online purchases.

EBay Sets Growth Goal

Online auctioneer eBay Inc. last week set a goal of \$3 billion in sales by 2005 based on its estimate of the size of its markets, including computers and collectibles, and the continued strength of its global business model. The goal implies sales growth approaching 50% annually over the five-year period.

Senate Commitee Issues Privacy Guide

The Senate Judiciary Committee last week released a guide for consumers doing business with companies on-line. "Know the Rules, Use the Tools" points out that most consumers are unaware that personal information about them is being collected while they surf the Web. However, the guide noted, people are worried about giving out their personal data, such as credit-card numbers, over the Internet. The committee said such concerns can jeopardize the expansion of e-commerce.

Short Takes

George Bell has resigned as EX-CITE@HOME's chairman and CEO. He will stay on as CEO until a replacement is found and will remain chairman of the broadband service provider until at least the end of next year. . . . LERNOUT & HAUS-PIE SPEECH PRODUCTS NV said it's cooperating with the U.S. Securities and Exchange Commission in an investigation of its earlier financial reports. . . . Assistant Attorney General Joel Klein, who legal observers expected would argue the government's side in MICROSOFT CORP.'s appeal of the breakup order issued this spring, plans to leave his job at the end of this month

Ariba Exchange Opens Up to Outside Buyers

Company spotlights big customer win

BY JULIA KING

RIBA INC. capitalized on the limelight of its user conference in Miami last week by announcing a slew of fea-

tures and enhancements to its electronic-marketplace software, including integration software that lets users of non-Ariba procurement software access Ariba-powered marketplaces.

Mountain View, Calif.-based Ariba also announced a major new customer, Transora.-

com. Transora is a Chicagobased electronic marketplace whose initial members include more than 50 global food and services companies representing about \$500 billion in trade.

Alex Gibbons, Transora's chief technology officer, said the company opted for Ariba's software, which he characterized as "best-of-breed," after

extensively evaluating other available technologies, presumably including software from Ariba rival Commerce One Inc. in Pleasanton, Calif. Commerce One staged a dueling user conference in Las Vegas last week (see story, page 6).



ly claimed to be leading the fast-growing market for software to power new digital exchanges. But many of their new marketplace customers have yet to process a transaction.

AMR Research Inc. in Boston is forecasting that the market for software to power electronic marketplaces will reach \$1.4 billion by 2002, compared with \$124 million last year. Last week, Ariba said about half of its 150 marketplace customers are up and running.

Ariba's marketplace platform includes technology from several partners, including IBM and Dallas-based 12 Technologies Inc. for supply-chain functions and Austin, Texas-based Tivoli Systems Inc. for system management and security.

"The goal [of the integration software] is to supply an end-to-end solution for building public and private market-places," said John Corshen, Ariba's vice president of market development. He estimated that Ariba's partners have completed about 60% to 70% of the integration necessary to do that.

Integration Status

Ariba's marketplace softwar works with:

- IBM's WebSphere B2B integrator infrastructure
- IBM's DB2 database software
- Tivoli's marketplace management software

But analysts disagreed.

"They seem to be executing on integration, but they're by no means 70% complete," said Pierre Mitchell, an analyst at AMR Research.

What has been completed, Mitchell said, are the less complex integration tasks, such as tying in catalog management capabilities to the marketplace software. Furthermore, marketplaces that have rolled out the Ariba software are using it primarily for simplistic transactions, he added.

In its current iteration, the Ariba marketplace software "takes you to the purchase order, but after that, they fade to black," Mitchell said. "They don't have heavy-duty supplychain capabilities."

BroadVision App Targets Relationship Building Online

ALEX GIBBONS says

BY TODD R. WEISS

BroadVision Inc. last week announced an application that it said would help automate and personalize the creation of business-to-business marketplaces on the Internet.

BroadVision President and CEO Pehong Chen said the MarketMaker application adds relationship management to the core task of handling transactions. He said it will allow companies to fully tailor their online catalogs to the needs of individual customers, showing only the 30 pages of items a customer buys from, rather than the whole 500-page inventory, for example.

Personalizing online catalogs can enhance relationships with suppliers, he said. "Relationships are going to be crucial to the exchanges" and not simply based on business transactions, Chen said. MarketMaker, which is based on the firm's One-To-One Enterprise platform, will be released next week. The package is expected to cost an average of \$400,000 per company, said a spokeswoman for Redwood City, Calif.,-based BroadVision.

Joshua Greenbaum, an analyst at Enterprise Applications Consulting in Berkeley, Calif., said the product expands BroadVision's offerings in the electronic-marketplaces arena. BroadVision has been leading the pack with its business-tobusiness personalization features, he said, while chief competitors Commerce One Inc. in Pleasanton, Calif., and Ariba Inc. in Mountain View, Calif., have provided leadership with their transaction engines and procurement components.

"They are starting to converge," Greenbaum said. "What BroadVision wants to do is get

into that part of the business," while Ariba and Commerce One are moving to implement personalization in their tools.

But one component is still missing from BroadVision's line: a supply-chain planning package that covers every base in an electronic marketplace. Greenbaum said the company has indicated that it will find a partner to add that capability, but if BroadVision wants market leadership, it should add the function now. As companies quickly get set up and involved in electronic marketplaces, he said, "user companies will need supply-chain management once they get past square one."

Personalization Is Key

The Online Asset Exchange in San Diego selected Broad-Vision last year for its online industrial equipment market-place. The exchange plans to use MarketMaker to give customers personalized access, including sorting for industry types and locations of listed equipment in the marketplace, said George Marootian, chief

technology officer at The Online Asset Exchange.

Rick Sturgeon, CTO at Source Alliance LLC in Morrisville, N.C., said the personalization features are another reason the online electrical products marketplace is implementing MarketMaker.

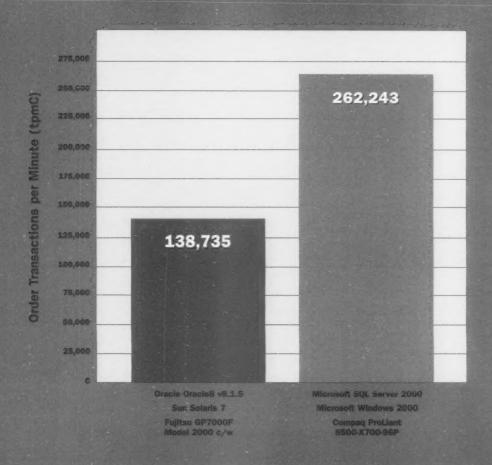
"BroadVision was just head and shoulders above the other people in that capability," Sturgeon said.

AT A GLANCE MarketMaker Features

The online marketplace platform expands Broadvision's B2B e-commerce offerings:

- Runs on BroadVision's One-To-One
 Enterprise 5.5 platform
- Allows personalization of site use for customers as well as e-commerce transactions, online community creation and account management
- Integrates with enterprise data systems
- Scalable and flexible system can be expanded as needs dictate
- Costs an average of \$400,000 per company

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Based on the TPC-C industry benchmark, Microsoft' SQL Server" 2000 Enterprise Edition running on the Compaq ProLiant" platform achieved almost twice the performance at almost half the system cost.

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UPS Service Aims to Ease Online Returns

As holidays near, service targets major Web retail woe

BY LINDA ROSENCRANCE

Service of America Inc. last week unveiled an online returns policy, called UPS Returns on the Web, to help consumers — and merchants — deal with goods purchased on the Web that buyers don't want to keep.

As consumers and merchants alike discovered during last year's holiday season, one of the biggest challenges to online shopping is making the return of an unwanted item as painless as possible for the shopper, analysts said.

Atlanta-based UPS's automated, browser-based system allows consumers to initiate returns over the Internet and provides them with on-screen labels they can print on standard paper directly from a PC.

Consumers can then take their packages to a drop-off location, hand them to any UPS driver or, in some cases, have them picked up, a company spokesman said. Once packages are shipped, shoppers can keep track of them directly via the merchant's site or through the UPS Web site.

Online retailer Buy.com Inc. in Aliso Viejo, Calif., has been piloting UPS Returns since June. Because of the service, Buy.com said, the number of calls it receives about incoming returns has been cut by 40%.

"This is exactly what UPS should be doing," said Donald Broughton, a transportation analyst at A. G. Edwards & Sons Inc. in St. Louis.

In contrast to UPS's system, Memphis-based Federal Express Corp.'s 3-year-old Net Returns service doesn't allow consumers to initiate a return request over the Internet or print return shipping labels from their PCs. Instead, they must make contact via telephone with a particular merchant using FedEx's service.

Jeff Maddock, FedEx's manager of reverse logistics, said the merchant processes the return request and schedules a package pickup at a customer's home or office by a FedEx courier, who then prints out the return shipping label.

Maddock said merchants are

Many Happy Returns

Key features of UPS's online returns service

- Inbound package information: Vital package information enables precise inventory management.
- UPS smart label: Package information contained on shipping label is linked with the tracking number to facilitate internal returns automation.
- Customizable e-mail: Allows merchant to send customized messages to consumers, vendors, manufacturers or a returns depot.
- Customer tracking: Customers get real-time information on status of returns.
- Proactive UPS service locator: Users receive a URL to get lists, directions and maps to the nearest UPS drop-off location.
- ASP structure: Because the service is hosted by a third party, businesses benefit from complex technology without the hassle of an extensive implementation.

able to route packages to their destinations, and both merchants and consumers are able to track returned packages.

Broughton said the indicator of whether UPS is on target with its new service will be determined by whether rival Fed-Ex responds and how quickly.

Maddock confirmed that FedEx is working on enhancements to its current returns system, although he wouldn't go into detail.

CEO: Orbitz 'Needs More Money Than God'

Airlines ante up to help site break new ground

BY MICHAEL MEEHAN

In his first public speech since taking the helm of Orbitz, the controversial ticketing Web site that's due to launch next June, CEO Jeffrey Katz last week said the online travel latecomer needs "more money than God" to make its grandiose technical plans work.

And Orbitz needs to break new technical ground, because the first movers in the online travel business moved long ago, he said.

"For his model of doing business, he's right," said Michelle Peluso, CEO of New York-based online travel package supplier Site59.com. "They have a huge customer acquisition strategy,

and that costs big bucks."

John Ackermann, CEO of Waltham, Mass.-based corporate travel supplier e-Travel Inc., an Oracle Corp. subsidiary, called the initial investment in Orbitz "staggering." He said, "It's hard to imagine who else would be willing to make that kind of investment on largely unproven technology."

Katz said an advanced search engine being built by Orbitz would have never seen the light of day were it not for the \$300 million being pumped into the venture by United Air Lines Inc., American Airlines Inc., Delta Air Lines Inc., Northwest Airlines Inc. and Continental Airlines Inc.

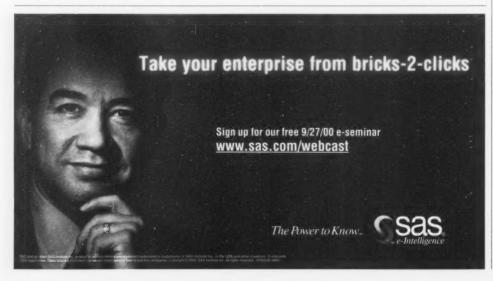
The search engine — being built with help from ITA Software Inc. in Cambridge, Mass. — will quickly sort through every conceivable fare alternative and pump the information out to users of its Web site. That kind of capability has long been a goal of the companies that operate the big computerized reservation systems.

Katz himself looked at the idea of developing such a search engine when he was managing Sabre Inc.'s reservations system during the mid-1990s. At the time, Sabre decided the project would be "too complex" to tackle, he said. But now, he added, "it turns out you only need more money than God to make it work."

For example, Katz said, Orbitz plans to install a PC server farm that can handle volumes of users "on the scale of an Amazon from the get-go." Orbitz then plans to have at least 100,000 users try out the site during a beta-test period that's scheduled to start in February.

Still, as travel sites Travelocity.com Inc. and Expedia Inc. each approach \$2 billion in annual bookings, Orbitz's launch has been delayed until June.

"If the strategy was still [just to] get in fast, we'd already be dead." Katz said.



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Intel Warns of Weak Third-Ouarter Results

As expected, Intel Corp. stock was drubbed in morning trading Friday on U.S. financial markets as twitchy investors unloaded shares. Intel announced Thursday that slow com puter sales, particularly in Europe, would lead to a third-quarter financial report that would be weaker than estimates. The company said it now expects revenue for the third quarter to be about 3% to 5% higher than second-quarter revenue of \$8.3 billion. Intel's share price was down 12.6% to \$48.87 at around 11 a.m. Friday.

ICANN Preps for Online Election

The Internet Corporation for **Assigned Names and Numbers** (ICANN), which oversees the Internet domain-name system, is in the final stages of preparation for a worldwide election of five new atlarge members of its board of directors. ICANN's 76,000-plus registered at-large members are scheduled to cast their votes online during a 10-day period, starting Oct. 1. One director will be elected from each of five regions: Africa, Asia/ Australia/Pacific, Europe, Latin America/Caribbean and North America. The election will be conducted by Election.com Inc., a Garden City, N.J., company that plans to provide secure log-in, voting response and tabulation functions

DHL Chooses BEA's Transaction Tech

DHL Worldwide Express has chosen San Jose-based BEA Systems Inc.'s e-commerce transaction technology to serve as the foundation of the company's revamped e-commerce system. Redwood City, Calif.-based DHL will install BEA's WebLogic Server and WebLogic Enterprise systems as the backbone of an e-commerce system supporting operations in 228 countries and territories. The system will help speed up online customer services such as shipment tracking and will serve as the basis for the courier's DHL Connect service, which allows business users to ship and track express packages from their desktops.

Group Pushes for B2B Security Standards

Center for Internet Security models proposal on Visa's e-merchant guidelines

SIX-MEMBER group that includes Visa International Inc., AT&T Corp., the SANS Institute and NASA is banding together to promote common, auditable security standards for companies doing business with one another over the Internet.

The group, which is calling itself the Center for Internet Security, will focus on defining and pushing the minimum security procedures and technologies that companies must implement when dealing with others over the Web, said Alan Paller, director of the SANS Institute in Bethesda, Md.

Such standards are becoming important at a time when companies are increasingly linking up with their partners, distributors and suppliers over the Internet, Paller said.

The goal is to ensure that all participants in such businessto-business environments adhere to common standards for the safety of all others on the

The Center for Internet Security will initially base its proposed standards on Visa's recently announced guidelines for online merchants for guarding cardholders' information, according to Paller.

Visa's 10 new requirements for its merchants stipulate that they must install a firewall, keep security patches up-todate, encrypt stored and transmitted data, use and regularly update antivirus software and restrict employee access to sensitive data. Other requirements cover the assignment of IDs and passwords and the regular testing of security systems. Organizations such as AT&T

and NASA, which have accumulated considerable experience defending themselves against hacker attacks, will provide technology and operational recommendations to the center.

The Information Systems Audit and Control Association. a membership-based organization in Rolling Meadows, Ill., that focuses on information technology governance, control and assurance issues, will be responsible for providing

Don't Like Carnivore? How About Altivore?

Open-source-code version of e-mail sniffer in the works

BY ANN HARRISON

Internet service providers may soon get an open-source alternative to the FBI's controversial Carnivore computer surveillance system, which delivers court-ordered information on criminal suspects.

In an attempt to give service providers a way to comply with court orders without installing Carnivore, Network Ice Inc. is developing Altivore.c, an Internet-sniffing program complete with inspectable source code.

San Mateo, Calif.-based Network Ice has released the source code for Altivore and has posted a demo of the program at www.networkice.com/ altivore

The new e-mail sniffer was developed in response to EarthLink Inc.'s questioning of the FBI's Carnivore program. According to Network Ice, Altivore gathers information from just one data stream without violating the privacy of other users. The FBI's Carnivore has been condemned by critics who say it's a "blackbox" system that conceals its source code from companies forced by court order to install it on their networks.

In addition to privacy issues, said Ed Hansen, a spokesman for Atlanta-based EarthLink, concerns persist about how any such program will affect network stability. He said EarthLink has developed its own program in-house but is looking at Altivore as well.

Programs that reveal their source code like Altivore does are much better tools for protecting the privacy of subscribers, according to Hansen.

AT A BLANCE

Alternative Snoop

Network Ice says its demo program, Altivore.c, performs functions similar to the FBI's Carnivore surveillance tool, including:

- Monitoring a suspect's e-mail (either headers or full content)
- Monitoring a suspect's access to certain types of servers (FTP, HTTP and others)
- Full "sniffing" of a suspect's Internet service provider address
- Discovery of a suspect's current Internet provider address through Radius log-on

When we have a view into what the program is doing, we can look at the information it returns, where it is coming from [and] what it is about and ensure that we are delivering discreet information to the investigative agency," he said.

Whether law enforcement agencies will accept Altivore remains to be seen, but the FBI and the courts have said Carnivore isn't the only tool e-mail tappers can use. In July, a judge ruled that EarthLink could develop and use its own tool.

"In the best-case scenario, if an ISP chooses to construct their own intercepts with their own tools, that works out best for everyone, as long as they are in compliance with wire tapping statutes and are willing to provide evidence on chain-of-custody issues such as how the information was intercepted and who had access to it," said FBI spokesman Paul Bresson

Network Ice said its source code, which is intended only for programmers, still requires extensive debugging. Instructions for compiling are provided within the source code, and the company is encouraging developers to add features to Altivore, such as packet reassembly.

AT A GLANCE Raising the Standards Bar

Visa has 10 new requirements, including the following, which stipulate that merchants must:

- Install a firewall
- Keep security patches up-to-date
- Encrypt stored and transmitted data
- Use and regularly update antivirus
- Restrict employee access to sensitive

the auditing recommendations.

In Need of a Quick Fix

In a similar initiative, the National Security Council (NSC) in Washington hosted another group of security executives from several companies, including Microsoft Corp., Oracle Corp., Exodus Communications Inc. and The Boeing Co., to discuss the need for quickly setting minimum security standards for Internetconnected companies.

That group will report back to the NSC in one month with recommendations on how to move forward with such a standard, said Bill Hancock, chief security officer at Exodus in Santa Clara, Calif.

"A committee has been put together to study what kind of standards we should use, what is available out there, what needs to be created ... [and] to look at organizations implementing best practices and to find out what we should be doing and what we might be do-

ing already," Hancock said. Much of the impetus for standard-setting comes from the growing threat to businessto-business networks posed by malicious hackers, including political interest groups and foreign governments, Hancock

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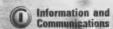
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Mobile business



Users: Optical Fiber Gives Copper a Run for the Money

Companies agree with findings of study

HILE COPPER cable remains the standard for connecting PCs to LAN hubs and switches, optical fiber may soon be the preferred way to make 10M and 100M bit/sec. Ethernet connections to corporate desktops, according to a recent study completed in July by The Tolly Group in Manasquan, N.J.

The problem in using optical fiber has been the cost, said Kevin Wilcox, assistant vice president of technology at financial services company Fiserv Inc. in Brookfield, Wis.

But in a recent major upgrade to the LAN that connects 1,100 PCs and other devices on Fiserv's two-building headquarters campus, Wilcox discovered that the cost to install optical fiber throughout, including horizontal runs directly to desktops and vertical cable runs to connect different floors, was about the same as using Category 5 copper Ethernet cable

Wilcox's installers used optical fiber and connectors from 3M Co. in St. Paul, Minn.

The Tolly Group study supports Wilcox's experience.

Tolly Group analyst John Curtis, who completed the study in July, said choosing optical fiber over copper means you don't have to install work-



OPTICAL PATCH PANELS like this

each floor of a building. Instead, networked devices in any given area are connected by optical fiber to an optical patch panel nearby. Other optical fiber runs connect these individual patch panels to a central network wiring closet in the building.

In the new optical model, Curtis said, network managers replace switches and routers with patch panels and centralize functions of the latter in a single wiring closet: there's no need to duplicate them in several intermediate wiring closets, according to Curtis, That means less equipment to maintain and the flexibility to make more network connections in less space.

Gus Jones, director of technology information at George Washington University in Washington, said that before he revamped the university's network, he hired an outside firm to compare the cost of using optical fiber and a centralized LAN architecture to that tecture over copper.

The cost of installing a copper-cabled LAN in the university's administration building worked out to approximately \$250,000, Jones said. But using optical fiber was only \$5,000

In the end, it took 11 closets to create an optically connected LAN covering 80 buildings on the George Washington campus, Jones said, compared with an estimated 160 wiring closets had he used copper.

"Initially, it was difficult to find manufacturers who would put fiber ports on their LAN switches," Jones said. But Parisbased Alcatel finally came through with switches that were optical-ready.

Another reason Wilcox and Jones chose optical over cable was distance. The maximum distance for sending Ethernet signals over copper is about 100 meters, compared with 325 to 500 meters over fiber, said Mike Lynch, a 3M spokesman.

Wireless, Management Top Agenda at Networld/Interop

Network security. remote connectivity tools major draws

John Shelest was disappointed with the absence of a "technical presence" when he attended the spring Networld/Interop exposition and conference in Las Vegas in May. "There were mostly sales and marketing people giving out a lot of business cards, and many of my technical questions were not being addressed," Shelest said.

Nevertheless, Shelest, a senior network engineer at Equity Residential Properties Trust in Chicago, said he will be in Atlanta this week to take in the fall Networld/Interop. He's willing to put up with the sales pitches from vendors to keep up-to-date on networking trends, he said.

The two areas that interest Shelest most seem to be prominent at Networld/Interop: network security and wireless connectivity. Shelest said he wants to see the new virtual private network software for remote offices from CheckPoint Software Technologies Ltd. in Redwood City, Calif. He said he's interested in using the product to secure network connections for Equitv Residential's 1,000 remote offices.

Shelest is also among those interested in wireless LAN technologies that save time and trouble in setting up networks in remote workgroups and branch offices.

Internet service provider UUnet, a WorldCom Inc. subsidiary in Ashburn, Va., said it's planning a major wireless announcement but declined to give details prior to Networld/

Another busy area at the show will be network management tools. Among those planning to show their wares is New York-based Entuity Inc., which will debut its Eve of the Storm network management

Mark Clayam, director of network services at application service provider Surebridge Inc. in Lexington, Mass... said his company will soon use Entuity's software to help track down and fix network problems from a central screen. Surebridge hosts enterpriselevel applications for large corporate customers. "We need to be able to detect and solve problems [on the network] before a customer is interrupted," Clayman said.

Notable among the network equipment makers that will be at Networld/Interop are San Jose-based Cisco Systems Inc. and Lucent Technologies Inc. in Murray Hill, N.J. Cisco will announce enhancements to its Catalyst 6000 line of network switches, and Lucent will try to give Basking Ridge, N.J.-based Avava Inc., its enterprise network equipment spin-off, some market traction.

Unified Messaging Still Needs Ironing Out

BY JENNIFER DISABATING

Users and vendors at the Electronic Messaging Association conference here last week were looking for ways to integrate their various forms of corporate communications into a single messaging system. But the consensus was that despite years of hype, it's going to take time for that to actually happen.

"I think that the technology is there for a lot of it," said Clark Loffman, vice president of global messaging at Zurichbased Credit Suisse First Boston. "But I don't think that it's there to deploy on a wide . . . 24/7 basis."

The convergence idea known as unified messaging (UM) - calls for the integration of all forms of messages e-mail, voice, fax and calendaring information - into a single system that can be accessed by the user's device of choice, be it phone, cellular phone, e-mail client or Web-based wireless device. Ideally, in such a system, text messages can be translated to voice and vice versa.

Business travelers "need to have as much with them as possible," Loffman said. "To simplify and improve life for users, many organizations would like to unify the various types of electronic communications people receive," explained David Ferris, an analyst at Ferris Research in San Francisco. "The earliest adopters are mobile executives, sales staff on the go and call centers."

Michael Goldgof, vice president and general manager of enterprise messaging at Lucent Technologies Inc. in Sunnyvale, Calif., said integrating some of the functions users want into a UM platform isn't going to happen soon.

One key application of UM would be to link customer relationship management to a user's messaging function. But that, Goldgof said, "still seems it will be a year or two out."

"[UM is] certainly not there vet," said Melissa Taylor, senior manager at WorldCom Inc. Taylor said users have been hesitant to accept the wireless element in UM because of security concerns.

What's Holding Up **UM Adoption?**

Most offerings don't translate from text to voice for access over the phone.

Many UM products don't have one standard authentication protocol.

Lack of security for wireless access.

Ability to deploy across an enterprise.

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Dell Building Wireless LAN Technology Into Notebooks

Release of new products will drive down cost, expand wireless market, say analysts

BY BOB BREWIN

HE EVOLUTION of wireless LAN technology from niche to mainstream products took another step forward last week with the planned introduction by Dell Computer Corp. of two notebook PC models that will have antennae, and eventually, built-in wireless modem connections.

The additions to Dell's Latitude product line for corporate users follow a similar announcement by IBM earlier this month of notebooks with integrated wireless LAN capabilities. Both companies are supporting wireless LAN antennae and modems that conform to the IEEE 802.1IB wireless networking standard and are designed to work in the 2.4-GHz frequency range.

Analysts said that building the wireless components into notebook computers — instead of mounting them on the edge of plug-in Peripheral Component Interconnect (PCI) cards — should save users money and make it easier to hook the portable machines into wireless corporate LANs. That, in turn, could help drive wider acceptance of wireless LAN technology, they said.

Pamela Roberts, vice president of marketing at Mobile-Star Network Corp. in Richardson, Texas, said built-in wire-less LAN support should "help wireless take off" by relieving end users of the need to buy and install peripheral devices. MobileStar is deploying a series of public-access wireless LANs at airports and hotels around the U.S.

Craig Mathias, an analyst at Farpoint Group in Ashland, Mass., said he thinks incorporating wireless antennae and modems into notebooks will drive the cost of the technology down to about \$75 per user by this time next year, which compares favorably with a current retail price of about \$199 for wireless LAN add-on cards.

Integrated wireless support "is a natural evolution of the technology," Mathias said. "It's a no-brainer." And while IBM and Dell can claim leadership among vendors of Intel-based PCs, Apple Computer Inc. introduced a line of portable Macintoshes with built-in antennae and drop-in radio-frequency modules last year, he noted.

Both IBM and Dell, in Round Rock, Texas, are initially offering two wireless-ready notebook PCs with prices starting

AT A GLANC

Wireless Notebooks

Wireless LAN-ready note-

 Have built-in antennae and electronics on plug-in PCI cards

■ Are easier to use right out of the box

■ Offer lower cost to consumers, with \$100 or more in savings over cost of current peripherals

 Use built-in antennae that reduce chances of breakage

at about \$2,500. Dell demonstrated the new Latitude notebooks at its DirectConnect conference last week, and the first model is due to go on sale today. Availability of the second system should follow within 60 days, according to Dell.

At first, users of the Dell machines will still have to use PCI-card wireless modems because the built-in modem isn't ready for shipment yet.

Continued from page 1

Wireless

policyholders and net premiums of \$6.1 billion last year, plans to roll out the mobile service — which it developed inhouse in just two months— in stages.

Initially, customers will be able to use their Web-enabled phones for activities such as getting price quotes, reporting claims and accessing real-time account information through the company's Web site, said Fred Khoury, Progressive's wireless Internet manager.

The Mayfield, Ohio-based insurer has also written most of the code needed to process wireless bill payments, and Khoury said he expects that capability to be up and running in a matter of weeks.

Progressive eventually plans to add the ability to push time-sensitive data to policyholders via wireless connections. For example, Khoury said, the company "could instantly deliver (information about) an auto recall notice to a customer's cell phone."

Stephen Williams, president of the Insurance Institute of Indiana Inc., a nonprofit trade association in Indianapolis, said it's "not uncommon for Progressive to be on the cutting edge with its use of technology." If Progressive is starting to take advantage of the wireless Web, other firms could follow its lead, he added.

Jeffrey Kagan, an Atlantabased wireless technology analyst, agreed and called Progressive "the Nordstrom's of insurance because of its emphasis on customer service." The addition of wireless access to its Web site "is a simple but smart way to use technology" to further improve the company's service, he said.

Progressive decided to build its own wireless applications instead of relying on middleware vendors and application service providers. "It was not clear we could get a better application from an outside vendor than we could develop ourselves," said Khoury, who joined Progressive in June.

Progressive opted against signing a deal with major wire-less carriers for "premium" placement on cellular phone-based Web browsers. But that shouldn't be a major impediment to the company's customers, Khoury said. Policyholders simply have to type Progressive's Web address into their phones or connect to the site through search engines that specialize in wireless commerce, he explained.

Khoury said the toughest part of the development project was learning how to use Wireless Markup Language, which enables firms to open their Web pages to wireless devices. "But now that we know it, we can bring other applications online quickly," he said. The back-end systems were built to handle the Wireless Application Protocol for linking mobile users to the Internet. But, Khoury said, any datacapable cell phone should be able to access Progressive's wireless Web site by means of translators wireless carriers have built into their systems.

A spokeswoman at GEICO Corp. said the Washington-based company takes loss reports over the Internet and has been doing so by phone for years. "It makes no difference if [the connection] is wireless or landline," she said. •

Continued from page 1

Payment

Policy. The panel is trying to determine why electronic-payment systems are largely married to 1970s payment technology — a costly circumstance for businesses and consumers.

Check cashing is the biggest culprit. Paper checks remain the dominant method for paying consumer bills and are also extensively used in retail and business-to-business payments. "We are the victims of our own success: We have created a very efficient check-deposit system," said Elliott McEntee, president and CEO of the National Automated Clearing House Association in Herndon, Va.

Americans write 68 billion checks annually, with an estimated combined transaction cost for businesses and consumers of more than 75 cents per check. That includes postage, bill printing and processing. In total, more than \$50 billion is spent annually on handling this payment method.

Consumers, wary of changing financial habits, have been a major obstacle to the emergence of new payment systems, said James Van Dyke, an analyst at Jupiter Communications Inc. in New York. But acceptance is growing. For instance, auction sites have ush-

ered in a new breed of financial service firms that transfer funds electronically from the bank account of the buyer to the bank account of the seller. "This is becoming the payment method of choice," he said.

But new forms of payment also face potential legal and regulatory problems, noted Thomas Vartanian, who heads the e-commerce and financial services transaction practice at Fried, Frank, Harris, Shriver & Jacobson in Washington. Both state and federal laws govern financial transactions. "Whose laws apply?" asked Vartanian.

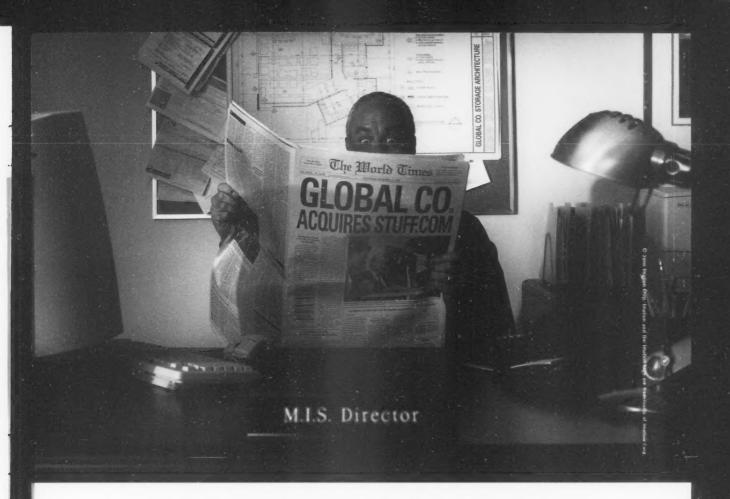
Supervalu and other companies are seeking low-cost payment alternatives. For example, Supervalu has implemented its own debit-card system in some stores.

Success will depend on a company's ability to convince consumers that these payment systems are preferable to those offered by the large financial institutions. Snyder said.

Paper or Wire?

1990s, electronic payments grew from 18% to 32% of all noncash payments, according to the National Automated Clearing House Association in Herndon, Va.

OLD HABITS: When it comes to paying consumer bills, paper checks still rule, with about 68 billion written annually



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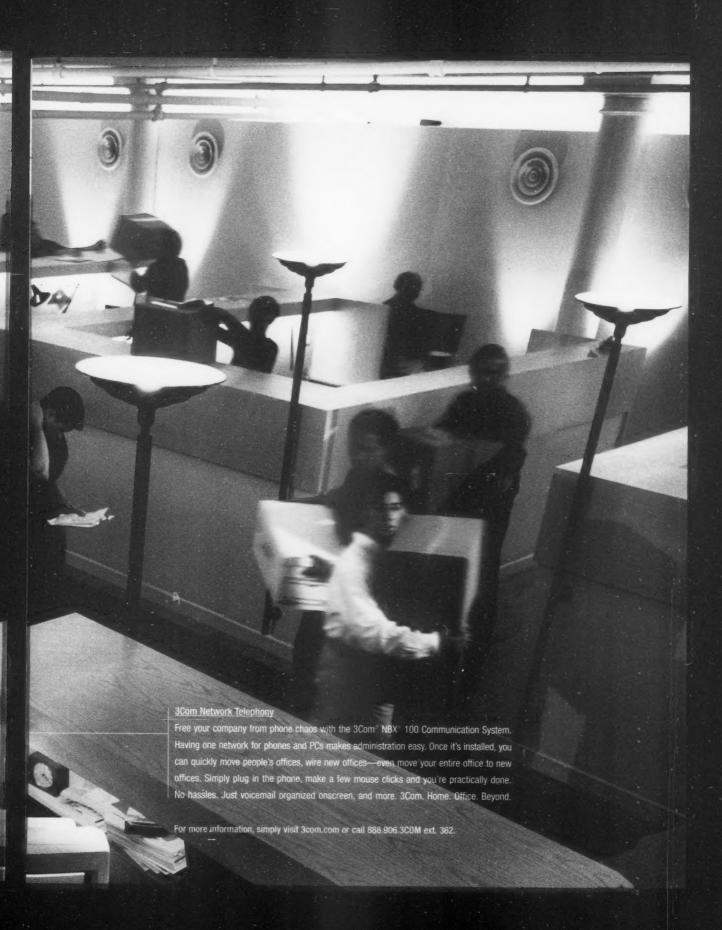
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Bigger Than Y2k

Narrowing the settlement cycle for stock trades will cost \$8B and take 3+ years

BY MARIA TRUMBLY

NDUSTRY EXPERTS figure it cost about \$5 billion to prepare Wall Street information systems for the year 2000 date rollover.

But preparing for something called T+1 will cost even more.

The U.S. Securities and Exchange Commission (SEC) has urged the industry to clear and settle all trades within 24 hours or T+1, which means "trade plus one day." It will require a major overhaul of brokerage information systems, which have been required to settle trades in three days, or T+3, since 1995.

In essence, T+1 will force a switch from Wall Street's traditional batch processing systems to a real-time processing network that never crashes.

The conversion to T+1 will take until 2004 and will cost about \$8 billion, according to Don Kittell, executive vice president of the Securities Industry Association (SIA) in New York and the organization's chief T+1 planner.

The good news is that Y2kspurred upgrades - as well as the transition from T+5 to T+3 five years ago - have helped lay much of the groundwork for this next challenge.

But the T+1 conversion may be more complicated than the Y2k conversion, and it will require an even greater degree of cooperation among industry participants than Y2k did. Kittell said.

Although stock trades seem instantaneous to retail customers - one click, and the stock is in the portfolio - the actual behind-the-scenes processing requires several steps

and several days.

Both the seller and the buyer must register the transaction with a central clearing organization, Depository Trust & Clearing Corp. (DTCC) in New York. Then the two accounts of the trade have to be reconciled, errors have to be ironed out and money has to change hands. In addition, there's the matter of handling the physical certificates

Currently, the system works through overnight batch processes, usually run on legacy mainframes.

"This monolithic stream is the bane of our existence," said Richard Iturbe, a vice president at Goldman Sachs Group Inc. in New York. The entire industry will now have to move to continuous processing, he said. "To the extent that your systems can operate that way, you're ready for T+1," he noted.

This part of the conversion will cost the industry about \$3.3 billion of the \$8 billion total, according to a report by the SIA and Chicago-based Andersen Consulting.

And the problems of converting or replacing old systems were what forced the industry to push back the deadline by two years, said Larry Tabb, an analyst at Needham. Mass.-based TowerGroup. The T+1 conversion was originally planned to conclude in 2002.

San Francisco-based Charles Schwab & Co. has already started working on replacing its batch processing systems, according to Vincent Phillips, senior vice president of electronic brokerage technology. He said Schwab has already worked on more than half of its legacy systems, not just because of the coming T+1 conversion but also because of decimalization - and customer demand.



CIO KURT WOETZEL says The Bank of New York has been preparing for T+1 since 1995

Our customers want more and more and more real-time data," he said. People who were satisfied with day-old data a short while ago now get frustrated if their accounts aren't updated instantaneously, he said.

But replacing the legacy systems - though a big headache and major expense -- will pale in comparison with the larger difficulty of getting all the players in the securities transaction chain to work together, said Tabb.

"[What] they're going to have to deal with is the political problem of getting everyone to agree on how it's going to work," he said.

One key link in the chain is DTCC, the clearinghouse for trade settlements. It not only has to upgrade all its internal processes but also all its links to the other industry players.

"We've been working on this for at least a year and a half or two," said Steve Letzler, a spokesman for the DTCC. Although Letzler couldn't confirm the numbers, the SIA said it expects DTCC to spend more than \$100 million to prepare for T+1.

DTCC has begun to eliminate its overnight batch processing, moving to a multibatch system with Nasdaq Stock Market Inc. and five electronic communication networks. A multihatch system replaces one overnight process with a series of batch processes that run throughout the day.

In addition, DTCC has formed a real-time link with the New York Stock Exchange. which handles about 300,000 large trades daily.

"Eventually, we'll get to the other systems and get everyone to real time," Letzler said.

A Step Ahead

Another firm that planned ahead for T+1 conversion is The Bank of New York Co., which provides settlement services to more than half of the broker dealers in the U.S. CIO Kurt Woetzel said he's been getting ready since the move to T+3.

"Starting in 1995," he said, "any new applications that we built were engineered around the following factors: They reflect information in real time and process information [in] real time, and they're messagebased, rather than moving files around"

Although there are still batch processes left, the critical systems - including those for delivering information to customers and taking transactional information from customers - are already running around-the-clock, he said.

The SIA will publish the technical standards for T+1 conversion by the end of next year, with full compliance expected to come by the middle of 2003.

A Voluntary Industry Effort To Reduce Risk

Unlike Y2k, which had the clear deadline of Jan. 1, T+1 is a voluntary industry effort so far. Its primary goal is to reduce the risk of a chain reaction of financial disasters, said Don Kittell, executive vice president of the Securities In dustry Association (SIA).

Shorter settlement cycles lead to increased stability for the entire global banking system, said Deborah Williams, an analyst at Meridien Research Inc. in Newton, Mass.

Just as a bounced check can have a ripple effect when you've already written other checks based on those funds, large trading firms can have the same problem that ripples throughout the financial world, Williams said

It isn't a hypothetical problem, either. In 1987, when a market downturn caused a few securities firms to go under, the five-day settlement period meant the problems rippled throughout the industry, causing other firms to fail. This spurred the move from T+5 to T+3, said Kittell.

If trades were settled instantaneously, the risk involved would be nonexistent. The SIA will, in fact, begin studying the feasibility of T+O in the next year or two.

The U.S. securities industry is also facing competition from overseas. Hong Kong and Singapore already are at T+1, Kittell said, with Japan and Europe heading in that direction as well. By beginning the process now, the U.S. will maintain its leadership position, he said.

The switch to T+1 will also allow the industry to handle increased volume. The current batch processes are coming close to their capacity limits,

Yet another reason to switch to T+1 is that it will save industry participants money - about \$2.7 billion per year, according to an SIA study - meaning that the overhaul will pay for itself in

The savings will come from reduced manual processing, lower error rates and faster payments, the SIA said.

- Maria Trombly

T+1 Timetable

The move to settling stock trades in just one day will cost \$8 billion and take several years.

02 2001

Specifica tions for settle ment process to

04 2001

▶ All firms must commit to build or outsource new internal

► Deadline for industry to

munication protocols

agree on standardized com-

processes that can handle T+1

➤ Transition to T+1begins

Q2 2003

► All participants must be compliant with industry communication standards

02 2004 ▶ Transition to T+1 to be com-

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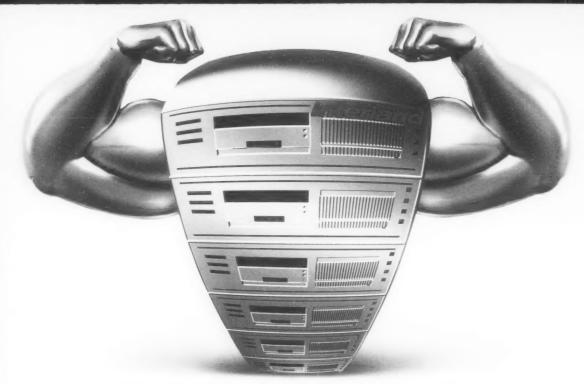


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Yahoo to Feature Barnes & Noble; Amazon Deal Expires

But Amazon has AOL and other financial concerns, say analysts

BY KATHLEEN OHLSON

ARNESANDNOBLE.com Inc. and its parent company, New York-based Barnes & Noble Inc., last week announced an agreement that makes the online retailer the featured bookseller on Yahoo Inc.'s Web sites. Yahoo previously had a similar deal with Barnesandnoble.com rival Amazon.com Inc.

"Barnes & Noble has taken a fairly cautious approach to its Web business, unlike Amazon, which has thrown lots of money around," said Harry Wolhandler, an analyst at ActivMedia Research LLC in Peterborough, N.H. The Yahoo deal will boost Barnesandnoble.com's profile, giving the online bookseller a chance to grab some of Amazon's customers, he said.

Under the deal, links to Barnesandnoble.com will be included on all Yahoo search results and book category pages, and the site will be featured on Yahoo's online shopping portal. The physical bookstores, along with Yahoo and Palo Alto, Calif.-based online advertiser Spinway.com Inc., will offer free Internet access to Barnes & Noble customers, starting next month.

Gus Carlson, a Barnesandnoble.com spokesman, declined to detail the terms of the agreement, but he characterized the deal as "significant."

Santa Clara, Calif.-based Yahoo had a similar deal with Amazon, but Amazon opted to stick with its other portal partner, America Online Inc., when its three-year deal with Yahoo expired earlier this month. Lizzie Allen, a spokeswoman for Amazon, said Dulles, Vabased AOL offered a "more

compelling" deal, but she de clined to elaborate.

Robert Hertzberg, an analyst at Jupiter Communications Inc. in New York, said Amazon has financial problems to consider. It posted an \$89 million operating loss for the second quarter, ended June 30, compared with a loss of \$67 million for the same period last year.

"Yahoo isn't as critical to Amazon as it was three years ago... Amazon's under pressure to rationally deploy its marketing dollars, and it's Yahoo isn't as critical to Amazon as it was three years ago.

ROBERT HERTZBERG, ANALYST, JUPITER COMMUNICATIONS INC.

started to do that by limiting its portal expenditures," Hertzberg said.

But Allen said Amazon's decision to part ways with Yahoo had nothing to do with any external pressures.

Merant Opens Online Development Service

Source code to be accessible over Web

BY LEE COPELAND

Unlike the typical application service provider (ASP), U.K.based Merant PLC not only wants to host applications, but it also wants to allow developers to create them. Merant recently launched Merant ASaP, which gives developers access to source code and code-management capabilities over the Web.

The Merant ASaP portal will allow customers to access their

own source code from a Web browser and tap into versioncontrol capabilities. The service also offers instant chat, e-mail and the ability to capture project documentation online. Merant officials said the service is applicable to any development language.

Intel Online Services Inc., the ASP subsidiary of chip maker Intel Corp., is hosting the service for Merant.

Rousseau Aurelien, CEO of Cambridge Information Systems Inc., a start-up in Cambridge, Mass., said Merant's ASaP service helps bridge the gap between the firm's two offices in Cambridge. The startup's 25 developers began using the service two months ago.

"Traditional tools are not well suited for high levels of collaboration among a distributed workforce." Aurelien said.

Kneko Burney, an analyst at Cahners In-Stat Group in Newton, Mass., said the ASP models is a sound platform to connect developers in disparate locations. "The Web environment enables developers to design applications more quickly and easily," said Burney.

Hosting Advantages

Rob Enderle, an analyst at Giga Information Group Inc. in Cambridge, Mass., said development services hosted by third parties offer the advantage of not locking developers into a particular tool set or platform.

"What ASPs have become are aggregators of services," he said. "If's very similar to cable, where the companies provide a set of channels from a wide number of providers, like HBO and ABC, so viewers have lots of options. But in the early years, you were hard-connected to just one provider."

Pricing for ASaP starts at \$2,500 to set up the service, plus additional charges of as much as \$100 per user per month. ▶

Banks Release Smart Cards

BY MARIA TROMBLY

The U.S. has lagged behind Europe when it comes to smartcard technology, with New York-based American Express Co.'s Blue card being the only credit card on the market with an embedded chip.

But that's about to change, as three banks have announced plans to release Visa smart cards. Providian Financial Corp. in San Francisco and FleetBoston Financial Corp. in Boston are launching the cards this month, and First USA Bank NA in Wilmington, Del., will launch them sometime in the fourth quarter.

According to bank officials, the cards will provide greater security for online shoppers, reduce costs for Web merchants and allow for services such as electronic ticketing.

"The technology and eco-

nomics now make it viable," said Jay H. Lee, a senior vice president at FleetBoston.

A year ago, the embedded chips cost \$12 each; now, the price has dropped to around \$3 each, Lee said. In addition, the

industry has started to converge on standards — Java Card for the applications that are stored on the smart-card chips and Europay MasterCard Visa (EMV) for payment processing.

"This is the standard," said Theodore Iacobuzio, an analyst at TowerGroup in Needham, Mass. Not all cards use EMV yet; many European systems use

proprietary standards, as does American Express with its Blue card. "But people are moving in that direction," he said.

There are two hurdles to

widespread adoption, said Frank Prince, an analyst at Forrester Research Inc. in Cambridge, Mass. Consumers have to be persuaded to use them, and merchants have to shell out the money to install smartcard readers. "It's a chickenand-egg problem," he said.

The banks will try to overcome that problem by issuing



VISA SMART CARDS like this Fusion Cobalt Blue card are starting to hit the U.S. market

free readers to their customers. Providian, for example, will give out 50,000 readers. After those run out, customers will be able to buy them for around \$20 each, according to David Alvarez, who heads the integrated card business at Providian.

The readers will allow smart cards to be used with online merchants, which only have to install software.

Merchants with brick-andmortar stores, on the other hand, will need to install new

readers to accept the cards. It's for that reason that smart cards will continue to also have a magnetic stripe for many years to come, Jacobuzio noted.

The cards will also have embossed numbers for those merchants that still have nonelectronic swipers.

Meanwhile, a handful of other Visa card issuers are expected to release their own smart cards in the next few months, which will encourage even more merchants to get in-

volved, Alvarez said.



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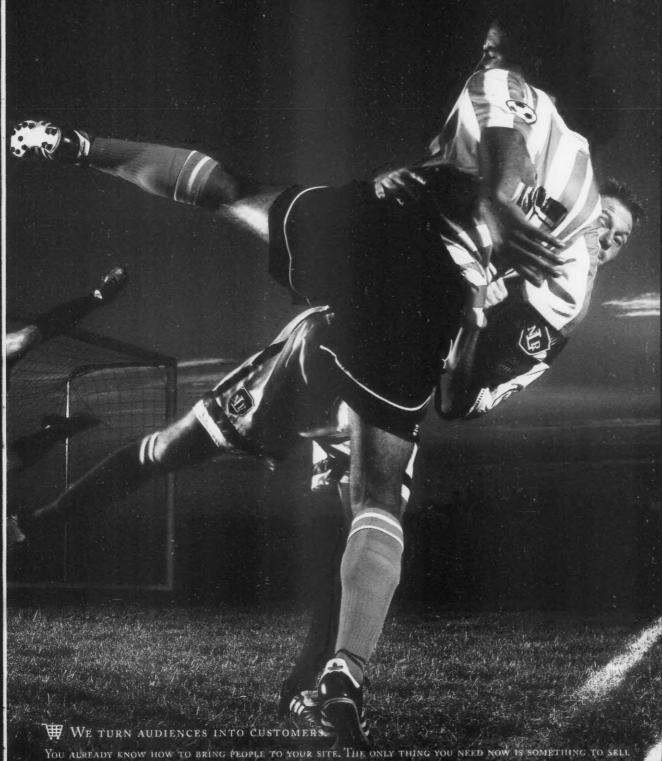


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NEWS

More.com Denies It Violated Privacy Policy

Online health products ret

Online health products retailer More.com last week defended its privacy policy in the wake of a Missouri lawsuit claiming the firm violated that policy.

The lawsuit said More.com released customer data to a

third party after promising that it wouldn't. A spokeswoman at More.com referred calls to a company statement, which said the San Francisco-based firm couldn't comment on the lawsuit pending an investigation of the claim by the Missouri Attorney General's Office.

However, More.com said in the statement that it had followed its privacy policy, which says the retailer will share information with third parties who fill orders for the site. "As a company policy, More.com does not give, sell or rent customers' personal information to third parties," the statement said. The lawsuit alleged that More.com released a customer's personal information to a third party after an investigator at the attorney general's office tried unsuccessfully to order contact lenses under an assumed name.

The attorney general said the investigator was solicited by Lens Express Inc. in Deerfield Beach, Fla., to purchase contact lenses under the assumed name, even though the investigator had never contacted Lens Express. However, More.com's privacy policy states that it uses a third-party fulfillment partner — in this case Lens Express — to fill and ship contact lens orders.

Scott Holste, a spokesman for Missouri Attorney General Jay Nixon, said it's up to the courts to decide whether or not More.com made a full and accurate disclosure of its policy to its customers.

Edmund Ha, an analyst at Giga Information Group Inc. in Cambridge, Mass., said, "There are really no cyberlaws in place. But if [More.coml had a disclaimer on its Web site [saying it shared customer data with third-party partners] before the lawsuit was filed, they are certainly within their rights to give out that information to their partners."



rvents leading to Missouri's furwsuit against More con:

1. Using an assumed name, an investigator at the Missouri Attorney ceneral's Office attempted to order sollact tenses through the More, com Web site.

2. The investigator was unaucressful in placing the order.

3. The investigator was unaucressful in placing the order.

3. The investigator was cubes-service of name - by another company, can Express, and asked if he wantal to purchase confact tenses orn that company.

4. Because the investigator said he adm't contacted Lens Express using the assumed name, the attorney operal determined that More compleased the investigator's persons for as fairly party.

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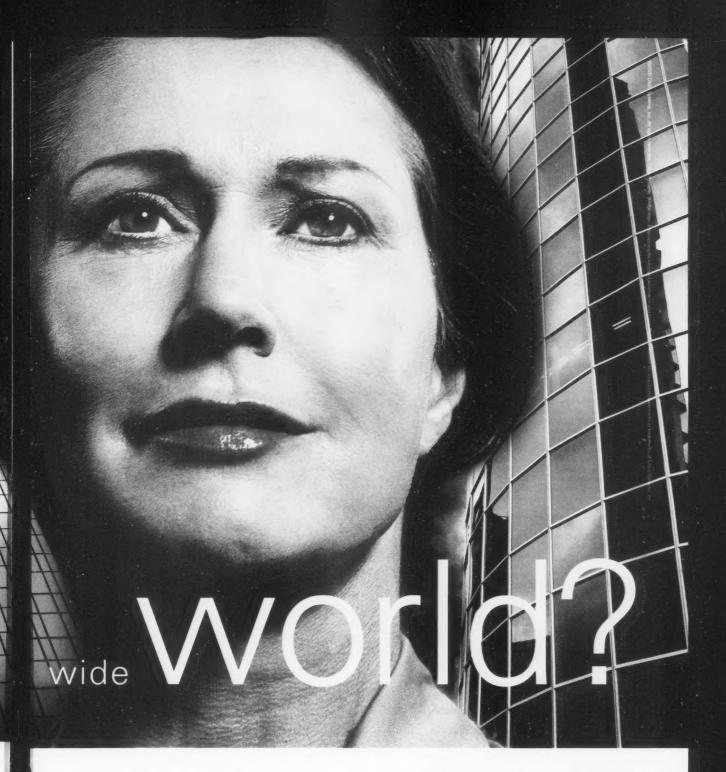
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BRIEFS

CA Sells Sterling's Federal Unit

Los Angeles-based defense contractor Northrop Grumman Corp. said it has agreed to purchase the federal systems group of Islandia, N.Y.based Computer Associates International Inc.'s Sterling Software Inc. subsidiary for \$150 million. Northrop Grumman said the Sterling unit will be incorporated into its Logicon Inc. unit in Herndon, Va., which had revenue of about \$1.5 billion last year.

Sun to Buy Maker of Server Appliances

Sun Microsystems Inc. said it plans to acquire Cobalt Networks Inc., a small and still unprofitable maker of Linux-based server appliances, in a stock-swap deal valued at \$2 billion based on the current price of Sun's shares. The purchase is scheduled to be completed by year's end. according to Sun. Mountain View, Calif.-based Cobalt targets its appliance devices at application and Internet service providers and at small and medium-size corporate users. The 3-year-old company lost \$8.6 million on revenue of \$28.3 million in the first half of the year, after reporting a \$22.3 million loss on revenue of \$22.8 million for all of last year.

Short Takes

Minnetonka, Minn.-based fiberoptics company ADC TELECOMMU-NICATIONS INC. has agreed to acquire Westboro, Mass.-based broadband developer BROADBAND ACCESS SYSTEMS INC... COREL CORP. said an unnamed investor may purchase up to 14.7 million shares of the company during the next two years. . . . Mary Coleman, who ran BAAN CO. for seven months before leaving the struggling applications vendor, was named CEO of RIGHTWORKS CORP., a San Francisco-based company that develops businessto-business software. . . . Dublinhased BALTIMORE TECHNOLOGIES PLC announced that it's acquiring U.K.-based CONTENT TECHNOLO-GIES HOLDINGS LTD. for \$1 billion. Content Technologies' MIMEsweeper policy engine inspects Web content and screen data.

Andreessen Targets Web Outsource Model

Ease of software use 'reduces barrier of entry' for large firms

BY CAROL SLIWA

OUDCLOUD INC., the latest venture of Netscape Communications Corp. cofounder Marc Andreessen, marks its first anniversary as a company this month. Thus far, Sunnyvale, Calif.based Loudcloud has signed up 30 customers of the Web infrastructure technology that it develops and then runs on an outsourced basis for large companies, e-commerce businesses and application service providers.

Andreessen, who is Loudcloud's chairman, recently spoke with Computerworld about his new company which has 370 employees and is backed by more than \$188 million in venture capital financing - and about the software business in general.

Q: It's surprising to see you turn up in a nitty-gritty infrastructure company. What interested you in Loudcloud?

A: We're all technology people. We said Netscape was always a technology company. This is a technology company in many ways. The truth is, this is an actual business with revenue. Our customers pay us midfive-figures to mid-six-figures of revenue per month for [our] service. . . . This sort of comes full circle with much of the stuff we saw at Netscape. Netscape was a commercial software company with all of the typical characteristics of a commercial software company. We'd take all of the customer's money up front, we'd throw the software over the wall and the customer would have to work with it.... The financial model of a software company is you have to move on to your next customer, because you have to go get next month's revenue. And so as a result, there's a tremendous amount of software that got built at Netscape that never got effec-

tively deployed by customers. | And it's endemic to the commercial software industry that there's this misalignment of interest between the vendor and the customer, where the vendor's not necessarily incented by customer satisfaction. And therefore, the customer is not necessarily incented to treat the vendors particularly well.

Q: It seems like a real hate/hate relationship.

A: It's a nasty business. You know, Gartner Group trains customers how to screw software vendors by doing negotiations on the last day of a quarter and [about] the nature of the software business - huge investments and zero marginal costs. Therefore, the customer knows that the vendor can actually produce the next copy of the software for free, so prices trend to zero. And the only way out, the only profit mantra in the software business, is to be a monopoly. . . . There are all these sorts of nasty aspects to the [software business] model. It's incredibly inefficient. And the situation gets worse and

and worse all the time because the software keeps getting more and more complicated. And then you look at the Internet, and you say, "Wow, a highspeed network interconnecting all businesses."

nesses should be able to go out there and pull down [the information technology] resources they need, all kinds of services .. on an outsourced basis.... And it really reduces the barrier of entry for any kind of large-scale Internet operation, where we are stripping the

technological complexity out. . If we can pull this off, it'll be a pretty fundamental breakdown of how this business was

Q: When do you think your company will become profitable?

A: For the company, I won't talk about it. But the [strategy] is to acquire customers and then keep them for a long period of time. We get paid every month.

And the [business] model also is to build out infrastructure and then fill it up to a high percentage of utilization over time. So like a telecom company, you'll be able to look at us from a financial standpoint on a percustomer basis or ... evaluate us per unit of capacity.

Q: Your company talks about building "Opsware automation technology." What is that?

A: It's software that we built for provisioning, managing and

scaling our structure. We do provisioning of everything but the CPUs. So [it's] app servers, databases, customer code, customer content, networking configurations, security, It's provisioning of that, and then it's [hardware] management of that, and



a nasty business'

then it's scaling of that. It makes it really easy for people to start out. It also makes it very easy for people to scale, because if you're growing, you just bring [capacity] online as you need it as opposed to having to make a capital investment. . . . If you don't need it the next month, we bring the capacity back down again. We can use it to run another customer.

Informix Splits Into 2 Separate Companies

Hit by weak sales that are expected to result in a thirdquarter loss. Menlo Park. Calif.-based Informix Corp. last week announced that it's splitting into two separate operating companies - one focused on its flagship databases and the other on Web publishing, e-commerce and business intelligence software that will work with multiple databases.

The breakup follows Informix's March acquisition of Ardent Software Inc., a data warehousing vendor in Westboro, Mass. The as-yet-unnamed business intelligence and e-commerce venture will be headquartered at Ardent's facility, while the database company — to be called Informix Software - will be based in Silicon Valley.

Informix previously said it would have 3,900 to 4,000 em-

plovees after last month's lavoffs and the planned hirings of some new sales and support workers. Last week, the company said the two separate companies will have a combined workforce of about 3,400 people.

In addition, the company warned that it expects to report a third-quarter operating loss of \$15 million to \$24 million, which will be widened by restructuring charges and other one-time expenses totaling as much as \$90 million.

Meanwhile, the Informix Software database operation will try to breathe new life into the company's core database technology. The database company, which expects revenue of \$780 million to \$800 million this year and will start out with 2,300 employees, is expected to be run by Jim Foy, another former Ardent executive who

was named a senior vice president at Informix last month.

In an attempt to revitalize its database sales. Foy said. Informix has a new technical architecture on the drawing board, after having recently completed a detailed analysis of its existing technology.

One More Chance

Consulting firm AMR Research Inc. in Boston described Informix's breakup move as "a last-ditch effort to reinvigorate" the company's database business.

The move may have come too late to help Informix take back much database market share from Oracle Corp. and other rivals, AMR said, But, the company added, the new management team from the Ardent side of the company "is showing it can make tough decisions and is ready to fight."

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OU'D SMILE TOO IF YOU'D JUST BEEN NAMED



The editors of PC World magazine judged hundreds of products based on performance, consistency, innovation and

value. Their verdict? "AMD's Athlon Processor is a superstar in all four" and "Athlon-based PCs sprinted to the top of our

corporate and home PC charts." These are just a few of the reasons that they chose the AMD Athlon" processor as "Product of the Year." You'd think



PC WORLD MAGAZINE'S PRODUCT OF THE

we'd be used to this by now. After all, AMD Athlon processors have already won more than 65 awards worldwide. But when we hear things like "record-breaking performance," "architecturally superior to Intel Pentium III" and "the first to hit a clock speed of 1 gigahertz, beating Intel at its own game," we still can't help but grin. You will too when you see what an AMD Athlon processor can do for your productivity. Log on to www.amd.com/pcworld.

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ERIK SHERMAN

ICROSOFT FINALLY allows

appears on tens of millions of PCs, and security experts wonder if hackers could

groups express alarm at the amount of

user profiling on many corporate sites.

Issues for consumers? Of course, but don't

shrug them off. Client security has become the

rate IT infrastructure.

cured dial-in lines con-

nected directly to a PC.

Kurtz, one of the authors

of Hacking Exposed (Os-

and CEO of Foundstone

borne/McGraw Hill; 1999)

Inc., a security consulting

break into a corporate net-

work through dial-up con-

nections more than 90% of

the time. That risk extends

to the home, where PCs -

high-speed Internet con-

especially with always-on,

company, it's possible to

According to George

most neglected and vulnerable link in the corpo-

Sometimes the problem is blatant, like unse-

use it to invade a system. Advocacy

some user control of cookies

with Internet Explorer, Napster

Don't neglect

desktop when it comes to security

MARYFRAN JOHNSON

Superman syndrome

AVE YOU HEARD THE ONE about the health care company searching for a new CIO? It isn't asking for much. Just a candidate who can provide outstanding leadership in all things IT, understand finance and business operations, grasp the nuances of clinical processes,

care deeply about managed-care philosophies and (naturally) have an advanced degree in a health care field or computer science. Leaping tall buildings in a single bound is encouraged but strictly optional.

I'm not making any of that up. Well, maybe the part about leaping buildings. But when you look across the IT careers landscape today, it's blanketed with a crazy quilt of expectations and demands that seem as out of whack with reality as dotcom valuations used to be. Not only is the nature of IT work changing

and growing, but so too is the long list of "must-have" skills. As the headline on a Careers story in this issue (page 62) aptly describes it, "Wanted: Security Superman."

Problem is, Superman was essentially a consultant. He flew in at the last possible minute, made a flashy rescue, nodded heroically to the grateful citizens and then retreated to anonymity as mild-mannered Clark Kent. He had a limited repertoire of skills (superhuman strength, X-ray vision and the ability to fly) that were ideal in certain dire situations but pretty useless the rest of the time. He wasn't a leader. He



Of course, Superman's days may be numbered anyway, if the world as seen by a handful of futurists materializes (see "Darker Days Ahead," page 57). They claim that the IT worker shortage will vanish within five years as non-IT people flock to the field and that the globalization of technical skills will disperse software development around the world. They also say the best IT people will emerge as the ones with "soft" skills in managing, communi-

So let's call off the search for Superman. He

When you think about the kind of

lems than it solves and actually fuels mundane chores like leading diverse technology biases or thinking about customer needs. Step aside, please. There's a building to leap.

in Marshfield, Mass., who regularly covers technology and business issues. Contact him at

cating and leading. The pundits are probably dead wrong about the details but right on about the trends.

never was much of a team player, anyway.

nections - get probed 10 to 20 times a day.

Since most home PCs aren't configured to detect and repel such advances, the chances are significant that the more criminally minded could take over such machines. Add a VPN connection into a company's network, and the entire business potentially — is laid open. Software such as Napster or Gnutella actually invite outsiders onto a hard drive to swap MP3 files. Can a user get anything more than music? There have been no reports of a security failure in such applications, but who would have thought a flaw in Microsoft Outlook (now corrected) would allow hackers to have it run software, like a virus, for them? Betting on the invulnerability of code is like using the lottery as a sole form of retirement planning. Think Napster is missing from your clients? Kurtz tells of finding the program on the production server of a major e-commerce company.

And it gets worse. Imagine that someone could look over the shoulders of developers, engineers, marketing people and business planners to track the Web sites they opened. Those performing product or market research on the Web could leave a visible trail. Such information would be a gold mine to competitors. Even cookies could provide much of this information, let alone surreptitiously placed sniffer programs, and we



haven't even started talking about breaking into e-mail. Whether the competitor does the actual snooping or simply buys the information from a third party is immaterial.

Security spending and awareness are typically directed toward servers. It's time to remember that the biggest breach happens at the weakest link in the chain: the desktop. Corporations should treat client machines seriously by thoroughly examining security and updating end-user policies. Insist that Internet software vendors provide strong privacy control. Sure, adding such abilities means that gathering information on your customers would be harder, and that would make the marketing department unhappy, but is selling an extra widget to John Smith really worth leaving the company's back door unlocked?

DAVID MOSCHELLA

The laptop era is nearing its end

DOW LONG DO you think it will be before traveling businesspeople mostly leave their laptops at the office, or perhaps dispense with them altogether? In a world with more than half a billion PCs in use, the idea of schlepping your own machine around just to connect to the Internet has clearly seen its day. The only question is how quickly this unwanted weight will, literally, be taken off our shoulders.

Since I mostly carry a laptop to keep up with my e-mail, I see this issue in two main questions: How well do pure Web-based e-mail systems work? And how easy is it to get access to a PC or some other

> Web-enabled device from wherever I am likely to be? Sadly, in both areas, there are still quite a few obstacles, but real improvements are clearly on the way.



sides on a particular PC somehow turns to sludge when accessed through any standard browser. Suffice it to say that if you're thinking about relying solely on Web-based e-mail, don't take response times for granted.

DAVID MOSCHELLA is vice president of knowledge

strategy at Meansbusiness, a Boston-based In-

ternet start-up that's

building a database of ideas. Contact him at

On a more positive note, keeping up with my personal e-mail while away from home has never been easier. For the past few months, I have been using a free service called Mail2Web. From any PC with a Web browser, I can read and reply to mail sent to my Earthlink address. The service is

so simple and fast that I'm surprised most ISPs

don't offer this capability themselves. It's nice not

to come home to an overflowing in-box.

Unfortunately, getting access to PCs while traveling remains much more difficult than necessary.

Even though in-room Internet access would mean much more to business travelers than warm cookies, VCRs or bonus points, few hotels have responded. The one I stayed in earlier this month in London was typical. The business center was open from 7 a.m. until 10 p.m., offering two Internet-connected PCs at a rate of \$25 for 30 minutes. If used just four hours a day, that's \$7,300 per year per PC.

Fortunately, an attractive, partial solution is already available. Until hotels and airports get their acts together, businesspeople should rely upon one another's PCs. Just as companies provide visitors with beverages, bathrooms and phones, courtesy will soon require asking if a guest would like to connect to the Internet. By spending a little time online before or after business visits, travelers could avoid having to slog through their messages when they get back to their hotels.

Think about it. Road-warrior psychology might soon turn full circle. Not having a laptop could suddenly become cool, while having to lug around an expensive machine just to use your outdated client software could become almost as embarrassing as not having e-mail became in the mid-1990s.

I've always thought that in a truly network-centric era, client/server e-mail products such as Outlook and Notes should be unnecessary. We're not there yet. But as networks become faster, Web services become more sophisticated, and business netiquette evolves, the end is coming into sight. And as the client/server model fades, carrying your own client will become the exception, not the rule.

READERS' LETTERS

Survey freeze-out

WAS DISAPPOINTED that Computerworld's Annual Salary Survey ["Rising in Riches," Business, Sept. 4] once again ignored my profession, technical writing. Technical writers are a key component in the software development process, documenting everything from programming standards to operations documents to user materials. We also frequently participate in creating design documents, standards, sales proposals, sales material, configuration managment documentation

test scripts, functional descriptions and more.

Documentation administrator/ webmaster Tampa, Fla. Diana Ost@excite.com

The hype for ClearType

In RUSSELL Kay's article "Copy Protection:
Just Say No" [Technology, Sept. 4], he refers
to "ClearType's technological brilliance." That's
somewhat like someone
touting the virtues of
antiskid brakes on a new
car. ClearType is old
technology, which removes its polish. I am not
disputing the usefulness

do anything new here. Dan Van Fleet IT manager Equity Land Title Agency Inc.

of subpixel technology;

however, Microsoft didn't

Equity Land Title Agency Inc Vandalia, Ohio danvanf@yahoo.com

Russell Kay responds: It's true that the technology (or at least the idea of it) was demonstrated many years ago, but there was no real-world presence or technology until Microsoft decided to do something with it, and that's what's worthy of praise and recognition.

Know your security

OUR ARTICLE about security certifications ["Secure With Your Security Pros," Technology, Aug. 14] points out the need for employers and recruiters to understand exactly what they require to fill a job opening. The difference that prospective employers and recruiters should be aware of is that if they are looking for a senior level "hands-on" engineer type, they should look for a GIAC certification. But if they need a senior manager or consultant, they should look for a CISSP.

Personally, I would want my hands-on security team members to obtain at least one GIAC certification, and I would want my management and consulting teams to at least have their CISSP certification, and if they had a GIAC certification, that would be even better. Michael D. Tonick, CISSP

Michael D. Tonick, CISS Senior security consultant Perot Systems Corp. Dallas

Somebody's watching

S I RESPONDED to Computerworld's Sept. 13 online survey — "Should companies be barred from secretly monitoring workers' e-mail and Internet usage?" — I couldn't help but wonder if anyone in my company was secretly observing and making note of my "yes" vote.

And now as I send this e-mail...

Jack Kaufman Senior programmer/ar

Senior programmer/analyst Ingersoll-Rand Corp. Athens, Pa.

More Letters, page 44

computerworLD welcomes comments from its readers. Letters will be edited for brevity and clarity. They should be addressed to Jamie Eckle, letters editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 879-4843. Internet: letters@computerworld.com. Include an address and phone number for immediate verification.

Amazon's pricing scheme is nothing unusual

THE NERVE of Amazon, charging different customers different prices for the same product ["Customers Balk at Variable DVD Pricing," News. Sept. 11]. It's shocking. I say, shocking, that Amazon.com would be so dishonest as to base pricing on browser preferences, frequency of purchase or ISP. Are customers also directing their anger against grocery chains, chain stores, gas stations and car dealers?

As long as it isn't a publicly advertised sale item, an item sold by a

grocery chain can have different prices in adjacent postal codes and even in different neighborhoods within the same postal code. Then there are the mailings sent to repeat customers of Company Y. Some customers will get a 15%off coupon, some 25%, some 10%. The value of the coupon depends on how much they spent with Company Y over the previous x months. Most companies practice variable product pricing; Amazon is no different.

N. Young Addison, III.

Windows 2000 ADVANTAG

The Web Magazine for IT Leaders Implementing Windows 2000 and Windows NT with Compaq Services and Solutions

Online this week:

POINT OF VIEW

Datacenter Solutions Lab reflects close Compaq-Microsoft relationship

Compag has demonstrated its commitment to Compagnas demonstrated its commitment to Microsoft Windows 2000 Datacenter with its Datacenter Solutions Lab, which will be staffed by Compag and Microsoft personnel and located close the Microsoft campus. www.windows2000adwantage.com/pov/ 09-11-00_datacenter.asp/300

TECH EDGE

XML's critical role in the .NET Framework

This articles show a technical snapshot of XML in the Microsoft .NET Framework and identifies key product components such as BizTalk 2000 and SQL Server 2000 that encompass the implementation of .NET. www.windows2000advantage.com/tech_edge/09-04-00_xml.asp/300

Microsoft's Bruce Olson: Working wit Compaq on Microsoft Windows 2000 Datacenter Server

As account manager - Enterprise Servers for U.S.-OEM Multinational Accounts, Bruce Olson focuses primarily on the relationship between Microsoft and Compaq. www.windows2000advantage.com/qa/09-04-00_olson.asp/300

COLUMNS

Ready, Set, Migrate! Let the 2000 Games Begin

Olivier J. Thierry believes there is a parallel between the preparation required to compete in the 2000 Olympic games and the preparation required for the migration and deployment of Microsoft Windows 2000. www.windows2000

CASE STUDIES

PRIMUS selects Compaq to launch U.S.

PRIMUS Telecommunications Group Inc. selected Compaq to provide a full suite of professional services and an integrated application service provider infrastructure – based on Windows 2000.

www.windows2000advantage.com/ case_studies/08-14-00_primus.asp/300

COLUMN >

Windows 2000 relationship to Microsoft's .NET initiative

The .NET Framework is based largely on the Next Generation Windows initiative announced earlier this year by Microsoft Chairman Bill Gates. Coming on the heals of the February release of Microsoft Windows 2000, some questions were raised concerning the future role of the new operating system within .NET. Let's preface this article with a clear statement that Windows 2000 is the centerpiece of the .NET initiative. The current .NET beta code is designed to layer within Windows 2000 and to fully utilize the most powerful features.

For the full story, visit: www.windows2000advantage.com/300

CASE STUDY >

Windows 2000 fever can be infectious, iust ask Datareturn.com

After thoroughly testing Microsoft Windows 2000 Advanced Server as part of Microsoft's Joint Development Program, Datareturn.com, a Web co-location service, lost no time migrating its own Web site, and customers' shared Web servers. These are the systems over which it has operating system revision control, says Jason Lochhead Datareturn.com's CTO. It's up to the customers, however, when to move their dedicated application servers from Microsoft Windows NT Server 4.0 to Microsoft Windows 2000, Lochhead notes, and some customer are taking their time preparing for the move, he adds.

For the full story, visit: www.windows2000advantage.com/ case studies/09-18-00 infectious.asp/300

MOMENTUM SERIES >

Compaq bolsters commercial desktop line with Deskpro EX

Compaq completed the redesign of its commercial desktop line with the introduction of the Compag Deskpro EX. Compag will also expand the Deskpro commercial desktop line and the Armada commercial notebook line to include new Deskpro EXS, Armada E500S and Armada 100S.

For the full story, visit: www.windows2000advantage.com/ momentum/09-18-00_deskpro.asp/300

www.Windows2000Advantage.com/300

TECH EDGE >

Two Microsoft packages achieve Unix functionality and interoperability with Windows 2000

As Microsoft Windows 2000 is increasingly deployed, the issue of integration and co-existence with Unix will become increasingly important. Fortunately, Microsoft Windows 2000 already adheres to many standards common to many variants of Unix including Domain Name System (DNS), Dynamic Host Configuration Protocol (DHCP), Lightweight Directory Access Protocol (LDAP) and Kerberos. Third-party software solutions such as Samba can facilitate file system sharing.

For full story, visit: www.windows2000advantage.com/tech_edge/ 09-18-00_unix.asp/300

2000 GENERATION >

Upgraded SQL Server 2000 facilitates Webbased applications, offers increased reliability and scalability



With the upcoming release of SQL Server 2000, Microsoft has an opportunity to play in the major leagues when it comes to enterprise-grade database servers. The new version — scheduled to ship this fall — has received a series of major improvements in four areas: Web applications, reliability, scalability and data analysis.

For the full story, visit: www.windows2000advantage.com/2000gen/ 08-21-00_sql.asp/300

QUOTE OF THE WEEK >

"With Windows 2000 and Compaq ProLiant 8-ways, we can add bigger blocks of processing power, which means we need fewer machines. This in turn has greatly simplified management of server farms."

> Jason Lochhead, CTO Datareturn.com

What is Windows 2000 Advantage?

The editorial mission of Windows 2000 Advantage is to become your primary source of timely, useful information for planning and implementing Microsoft Windows 2000 on Compaq solutions and services.

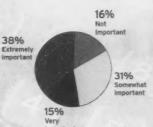
Windows 2000 Advantage is a Web-only magazine because that lets us bring you, the IT leader, great stories that apply to your day-to-day work. We'll keep you up to date with a weekly e-mail alert so you don't miss a thing.

Windows 2000 Advantage is underwritten by Microsoft and Compaq. Its charter is to address the issues that most concern IT managers charged with keeping their companies on top of the latest and best solutions Microsoft and Compaq have to offer. Toward that goal, we offer a wide range of stories including case studies, columns and news to provide you with information you can't find anywhere else.



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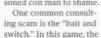
GEOFFREY JAMES

Beware of consultants peddling snake oil

F LARGE IT projects were sold like snake oil, maybe people wouldn't be so surprised to learn that 40% of them end in utter failure, according to surveys conducted by The Standish Group. Another 33% are "challenged," meaning that they were completed late, over budget or with fewer features and functions than originally specified.

The failure of a large IT project can involve huge cost overruns, drive a company out of business and even (God forbid) get a CIO fired. Many

IT executives believe they can prevent such failures by hiring consulting firms to do their development for them. But that can be a really bad idea, because while many IT consultants have high business ethics, some firms are still engaged in business practices that would put a seasoned con man to shame.



consulting firm sends high-powered partners to make the sale to top management, with the clear implication that these luminaries will be working on the project. But when the project actually begins, it's staffed by MBAs right out of college. This allows the consulting firm to charge big hourly fees to the client while paying its employees entry-level wages.

ww.geoffreyjames.com

the author of numer

high-tech business.

Another frequently used consulting scam is the "big string-along." This is when the consulting firm encourages the client to keep adding features and functions, so that the project is never completed. Each new feature adds more dollars to the consultant's bottom line because there's very little additional sales cost.

One of the cleverest consulting scams is the "blame the victim" routine. In this scenario, the consultant builds a paper trail (often beginning before the project commences) that documents everything the client did that might lead to project failure. That way, the consultant can turn around and blame the client when the project goes south.

Unscrupulous consultants have numerous ways of covering their tracks. Some ask a client's low-level employee to sign a document saying that a particular piece of software is up and running before it has been adequately tested. That way, if the client ever tries to sue, the consultant

can produce a legal document saying that everything was hunky-dory when delivered.

Like most con artists, consulting firms rely upon the silence of their victims to avoid detection. Let's face it — most IT managers figure it's best to keep their mouths shut and hope for the best when a big IT project goes south. After all, who wants to stand up in front of the board of directors and admit that they invited the foxes into the henhouse?

What's ironic about this is that many IT consultants are completely unaware that they're doing anything unethical. One of the most telling moments in the 1962 Oscar-winning movie *The Music Man* is when archetypal con man Harold Hill is confronted with the fact that he's selling musical instruments even though he has no intention of teaching his would-be students how to use them. Hill, crestfallen, reveals the psychology of a successful con man: "I always believe that there's a band, kid."

In other words, con men, like some consultants, are at their most persuasive when they're believing their own BS. May the client beware.

MICHAEL GARTENBERG

What do you want from the Internet of tomorrow?

F THE FILM The Graduate were being made today, the advice given to Dustin Hoffman wouldn't be "plastics" but rather, "wireless." New cell phones come Internet-equipped and include tiny browsers. The experts are, of course, already speaking of trillion-dollar markets. But is the next-generation

Internet the wireless Web? Or is wireless more hype than reality?

The problem is that many within the industry are confusing the next generation of the Internet and the Web as being necessarily wireless in nature. This is a mistake, confusing the transport of information with the actual functionality. Today's Web isn't primarily about transport and wasn't successful because of HTTP or TCP/IP. The key to the

success of the Internet of today and tomorrow is the delivery of services and functions.

Future Internet platforms will share little in common with the prevalent platform of today, namely the PC. While the PC will continue to exist as a critical information device for many individuals, many additional devices will supplement it. One of the first will be the cell phone, which is leading the charge that the next iteration of the Internet will be wireless in nature. The truth is that wireless devices are merely the next step in the evolution of the Internet, much as the Web changed the face of the Internet in the early '90s.

The essence of the next generation of the Internet is

of the Internet is that it will be very different from today's wired Web. Today's Internet is dominated by the PC platform. That implies high-bandwidth connections, large color screens and complicated operating systems such as Windows and Linux. The devices of the next generation may not share any of these attributes. The result: It will be critical that the applications created for the next generation of the Internet for commercial business use don't merely mimic the existing PC-centric applications of today. Rather, these new applications must either add functions to today's applications or be entirely new in nature and function.

Have you ever tried to use a Web-enabled cell phone to do something as mundane as purchasing a book? It's an overly complicated process that most people won't put up with (except for possibly the technologically infatuated, who will endure the hassle so they can tell people how they ordered a book from their phones). While most people won't want to purchase books or airline tickets from their cell phones, air travelers might be interested in knowing when there is a gate change, or if the flight is delayed or canceled. This is precisely that type of application that extends existing functionality.

But that's only half the story. The next generation of the Web will also enable new types of applications and services that couldn't exist on the current Internet. For example, the ability to have a single device that enables a person to search for an item, compare prices, get directions to the merchant, check inventory and use the device to pay for the item is a reality that's coming soon. But these functions aren't limited to wireless devices and cell phones. The wireless connection will open the door to a whole new class of devices that will enable new types of commerce, communication and connectivity.

IT departments need to spend time now looking at new devices and how they can and will be implemented and deployed. Existing applications need to be reviewed for how they will be presented on next-generation devices both in terms of display and business logic. The key is to focus on the functionality and not just the transport.

What are you doing to prepare for the next generation?



michael Gartenberg, former vice president and research area director at Gartner Group Inc., is looking for the next generation of Internet technologies. He can be reached at

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READERS' LETTERS

Sun's 'standard practice' of nondisclosure doesn't make sense

N THE LETTER "Standard Practice" [Readers' Letters, Sept. 11], Computerworld was attacked for reporting Sun's practice of secrecy and denial concerning memory problems in its high-end servers.

Computerworld was absolutely correct to report the problem. If the report put Sun in a bad light, it was Sun that is responsible. Nondisclosure agreements would make sense if a vendor was working closely with a customer on improvements to a proprietary design. This was not the case. Sun was trying to conceal an ongoing problem.

Computerworld's readers are IT managers who need to know if they can trust a vendor during and after a purchase. If Sun's support policy includes denial and concealment, Computerworld readers need to know that.

I commend both the reporter and the editors for a job well done.

John Pittaway

IT consultant Santa Ana, Calif. ipittawa@pacbell.net

WORK FOR ONE of the U.K.'s largest IT services companies, where we run all levels of Enterprise servers. In the last 12 months, we've had serious problems with E10ks, E6ks and E4ks on services we run for external customers. The problems got so bad on the E6500-based service that our customer was close to terminating the contract.

I ran the implementation of the service based on the El0ks and was singularly unimpressed with Sun (U.K.)'s customer services and professional services teams. I strongly felt their en-

gagement with us was driven more by the desire to protect themselves from any issues on our implementation rather than actually helping us deploy our system/application. Even after we read your article on the cache problem ["More Users Slam Sun for Memory Issue," Page One, Sept. 4], our Sun-Service manager still claimed ignorance of the issue; maybe the non-disclosure agreement applied internally also.

My experience with Sun was in stark contrast to that with Sequent, with which we had worked for most of 1999 to deliver a major infrastructure upgrade on another major U.K.-wide IT project. I couldn't speak highly enough of the guys with whom we worked there. Today, my preference would be to deploy Sequent/IBM NUMA-Qs. Don Thompson

Belfast, Northern Ireland

Living in a state of denial

THE ARTICLE "Gimme Some Respect!" [Business, Sept. 4] got me thinking about training. The state of Alaska, for which I work, is nervous about providing training, for fear that it only increases the disparity between an employee's state salary and potential private industry salary. To solve this problem, my division instituted a policy that requires any IT employee who receives at least \$501 worth of training to commit to two years of additional state employment, or else reimburse the state for the training expense. That's two or three days' salary.

What a Dilbertesque solution. Does this make me an indentured servant for the state?

David Grove

Department of Health and Social Services Juneau, Alaska

Reasons for raising H-1B visa cap need to be rethought

ORM MATLOFF'S argument that the H-1B cap shouldn't be raised because "insincere employers use the shortage of programspecific experience as an excuse to hire foreign workers who are less expensive" is only partly correct "Should the H-lB Cap Be Raised?" Special Report, Aug. 28]. Cheap labor is just one aspect of it. The main problem is that employers reject 98% of local applicants for programming jobs without realizing that any competent programmer can pick up a new programming language quickly. In some cases, the overseas programmer has undergone only short training in a private training shop, and his experience is just on paper. Once the programmer is in the U.S., basic insecurity drives

him to work hard and learn on the job fast. The government may increase the H-IB cap to any level, but it will never be sufficient as long as the driving factor is cheaper labor and there is wage disparity between the U.S. and other countries.

Arawat Singh Norcross, Ga. arawat@juno.com

UEST SYSTEMS Inc. President Dave Samuelson's thinking on H-IB visas is wrong ["Trade Group Urges More H-IB Visas," Computerworld.com, Sept. 61. I have a BSCS and 10 years in C, Unix. Oracle and SAP, yet even though I've taken Java classes, I can't get any response from companies posting developer jobs in the San Francisco area. The bottom line is that the supposed need for H-IB developers is baloney. It's time to put the brakes on this runaway train.

Rob Stuehler

SAP developer San Francisco rasf@pge.com

Easy to fall behind on the buzz

T WAS REFRESHING to read "Lose the Buzzwords" [News Opinion, Sept. 11]. I've been working for less than two years as a programmer/software developer, and I already feel outnumbered by people who are addicted to buzzwords and saying them as fast as they can. I guess that makes them more successful.

Brad Kilman

Software developer BMK Inc. Oklahoma City

bkilman@jacksmerch.com

Recording industry should embrace technology's potential

THE RECORDING Industry Association of America is being shortsighted ["Recording Industry Group Urges Court to Uphold Napster Ruling," Computerworld.com, Sept. Il]. It maintains that Napster's technology hurts recording artists, but it also provides them a wealth of opportunities to reach more potential customers at lower cost.

The technology to capture copyrighted material won't go away, and copy-protection schemes are usually defeated long before the cost of developing them is recovered. The RIAA needs to embrace the technological revolution that is upon it if it wants to realize the benefits it can provide.

C. Marc Wagner

Services development specialist Indiana University Bloomington



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BUSINESS

OH, THE HUMANITY!

When devising business-continuity plans, companies take steps to make sure systems and operations can continue with little or no interruption. The one piece often missing from such plans is the human factor — how to meet the needs of employees and their families so they're around to keep things going in the event of a disaster. • 48

WHY WIRELESS?

Handhelds are cool, writes Kevin Fogarty, but flexible, broadband networking is the real steak in the sizzle about wireless technology. The problem is, vendors have yet to figure that out. • 48

SPECIAL EFFECTS

At Cinesite's digital effects studio, tracking help desk queries has been nothing short of a nightmare. So the company is shifting from its old paper-based system to a new wireless-accessible workflow software package. It's an idea that's catching on among companies, but wireless workflow systems are still in their infancy, say analysts. • 52

HUMAN Supply Chain

For years, manufacturers have relied on supply-chain management to track their merchandise. Now, service companies are following their lead as they turn to automated systems to help track intellectual capital and the status of projects. • 54

THE FUTURE

Finally getting used to your Gen X colleagues? Well, make way for the Millennial Generation the next wave of employees expected to swarm into the labor market in the next five years. Futurists say this new workforce will bring vast changes to the workplace. Among them, an end to the worker shortage, more non-IT-trained workers in IT jobs and lower salaries. > 57

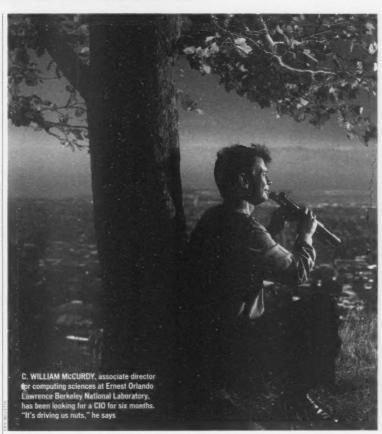
SECURITY SQUEEZE

Hiring is tough for everyone, but trying to land a qualified information security executive can seem impossible. Certified security chiefs are in short supply and are choosy about their options. Find out what they're looking for in their next jobs. 162

CHANNEL

Stores, telemarketers, Web sites, catalogs. The channels for selling goods are increasing, but rather than boosting productivity and sales, companies often find that their divisions are in conflict. But, experts say, channels can complement each other if managed correctly. • 80

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IN SEARCH OF THE RIGHT CIO

THE STAKES ARE HIGH in any CIO search. Companies want to find people with the right balance of technical skills and business instincts. But for highly specialized, complex fields such as science or health care, it's just as critical to find people with industry expertise. The problem is, there aren't many of them out there.

Guarding Staffers From Nature's Worst

Taking care of employees is as critical to business continuity as protecting systems

BY KATHLEEN OHLSON

When Mother Nature unleashed her wrath during Presidents Day weekend this past February, an ice storm paralyzed the Southeastern U.S., damaging homes, blowing out electricity lines and turning streets into skating rinks.

At CheckFree Corp., an electronic payment service based in Norcross, Ga., 20 key information technology employees worked around the clock to ensure that the company's systems didn't go down during the storm. As part of its contingency plan, CheckFree housed staffers and their families in its campus hotel.

"[Employees] are the key resource that keeps companies in business," said Brian Mac-Kay, senior business continuity coordinator at CheckFree. "If employees know there's a safety net for them and their families, they won't hesitate to do the job."

As CheckFree and other companies protect themselves against wildfires raging through the Western U.S. or hurricanes in coastal areas, they're also paying close attention to employees' needs as part of their disaster-recovery plans. Otherwise, there would be nobody around to flip a server switch back on.

"Companies have traditionally focused on the technology, not the employee," said Linda Cerni, a disaster-services product manager at Comdisco Inc., a continuity services vendor in Rosemont, Ill. But companies are starting to realize that "if they don't support employees, there's no point saving the data at a hot site, because no one will show up."

Companies that wait until after a disaster hits before addressing employee needs may find that it's too late, said Philip Jan Rothstein, president of Rothstein Associates Inc., a disaster-recovery consultancy in Brookfield, Conn. For example, a financial services firm he worked with failed to address transportation for its employees in its business contingency

plans. When a hurricane hit five years ago, employees couldn't get to the data center, and it took two days for the business to restart.

"Most organizations don't invest enough time before a crisis to see if a plan works," said Rothstein. "If it doesn't happen in the beginning, lots slip through the cracks."

Attention to Detail

When two tornadoes ripped through Fort Worth, Texas, in March, the windows at Union Pacific Resources Group Inc.'s (UPR) corporate headquarters were shattered by flying debris, destroying its data center.

Fortunately, UPR (which was bought the following month by Houston-based Anadarko Petroleum Corp.) already had a contract with Comdisco to rebuild its computer center and offer business support in case of a disaster.

Though UPR ramped up fairly quickly, its contingency plan needed tweaking, said Todd Coates, a former IT manager for corporate systems security, standards and training at the natural resources firm.

As part of its original disaster resources plan LIPR had its

As part of its original disaster-recovery plan, UPR had its data operations center mirrored in Carlstadt, N.J. Because the data center was repaired in just four weeks, the company was able to temporarily set up shop at Comdisco's technology service center in Grand Rapids, Texas, rather than move its entire data center staff to New Jersey.

"But if there was widespread damage, it would be hard to convince anyone to leave for New Jersey if they were hit by a tornado," said Coates. "Employees want to know their personal lives are taken care of and they're not at the mercy of Mother Nature."

Practical Steps

Just as companies need to think about the physical needs of employees, they must also provide counseling services, said Gaeron Caldwell, president of Axcess Disaster Consulting Group in West Vancouver, British Columbia.

Cindy Custer was one of thousands of citizens who rode Disasters, page 54



KEVIN FOGARTY/BRICKS AND CLICKS

Missing the picture

OU'D THINK that with all the ink we've spilled writing about wireless technologies, we'd have gotten to what's important by now.

That happens sometimes in the news business, as the pack follows some flash in the pan that seems to be news but is really just a symptom of a larger story that's undercovered. Monicagate wasn't about an intern, after all; it was about hardball politics that affected every action of both the White House and Congress. But the pack followed the obvious, lurid details, not the background story.

I realized that the press is undercovering the background story on wireless technology a few weeks ago at a conference where I moderated a session on "Managing Mobile Workers."

The sponsoring vendor and conference organizers wanted us to talk about how to support major-league applications on handhelds and smart phones and ways to enable nonmobile workers to become mobile. They wanted the same sexy, gadget-focused story Computerworld and other publications have been writing for the past year.

But the users at the session didn't want to talk about that. They didn't trust handhelds. They loved the convenience of wireless technology but didn't think it would have any impact on their core applications in the next two years.

Most of them recognized that they would have to adapt to the consumerdriven trend toward mobile computing enough to support PDAs internally and probably create a mobile/ smart-phone channel for their Web sites. That's not really a big deal.

But creating a way to give employees access to mission-critical applications from the road is a scary, complex thing. Two-thirds of the IT users that Computerworld polled for a July 31 story said they

planned to support wireless technology in the future, but half also said security and reliability would be a serious problem.

My session members agreed. They couldn't see how they could build access to core applications

for devices that lack firewall clients and encryption, and that drop information if the batteries fall out or distribute it to the public if the owner leaves it in an airport.

They said the real priority

isn't connecting Jill Salesperson to her contact database; it's connecting the Wichita office to the VPN.

Wireless is moving rapidly in that direction. Despite the high-profile demise of the Iridium network, satellite data connections are becoming an affordable way to connect remote offices.

Broadband wireless is also developing so fast that it may overtake DSL and ISDN as the best way to cover the last mile between a telco and a branch office. And

wireless LANs will reach 22M bit/sec. within the next year or so, eliminating much of the need to change wiring and a lot of the crawl-under-thedesk support that sucks up so many IT resources now.

That's where wireless can really deliver. That's

the thing about wireless that's truly important to IT.

Yes, handhelds are cool. But when wireless really arrives, PDAs and wireless e-mail are the least of what IT can expect from it. •



KEVIN FOBARTY is

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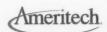
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intermedia Tons

Wireless Workflow Apps Gain in Popularity

BY MATT HAMBLEN

At Cinesite Inc., a digital special-effects studio in Hollywood, artists pore over computer displays, banging out images for upcoming film hits using a variety of desktop platforms and programs

The rigors of 200 artists creating digital images for films like X-Men put tremendous demands on the company's information systems and help desk.

To adjust, the studio is installing a wireless workflow software package to replace its old paper-based system for tracking trouble reports from employees and planning new systems installations, according to Philip Rowe, senior systems administrator at Cinesite.

"What we've had until now is basically a clipboard list of information and people stopping you in the hall to ask what's going on with a system," he said with a laugh.

"Help desk jobs were not getting done, and we'd lost track of work issues, and there were problems with response,"

Rowe added. "Nobody would know the status of a project, or the person who did know would be out sick."

Wireless connections to workflow software products are gaining popularity, as they help workers move and file reports such as help desk requests and responses, analvsts said.

"Wireless applications will give a shot in the arm to workflow vendors just because of the gains from wireless productivity," said analyst Nathaniel Palmer at Delphi Group Ltd. in

Cinesite's staffers initially will input help desk records on Palm VII devices that are tied to computers with a synchronization cradle. But eventually, they will be able to work wirelessly from any location, even from home.

Cinesite bought three products from Teaming starts at \$840 per user for

Springs to create the workflow automation and allow access to the data from PalmPilots. Pric-



PHILIP ROWE, senior systems administrator at digital special-effects studio Cine-Share Inc. in Colorado site, says the company is installing wireless workflow to aid in help desk requests

all three products, according to date work processes, but wire-TeamShare. TeamShare's wireless access over a wide-area less mobile functionality was network is "still very early," added in July with synchrosaid Phillip Redman, an analyst nization help from Aether Sysat Gartner Group Inc. in Stamtems Inc. in Owings Mills, Md. ford, Conn. Many companies use wire-

However, not all companies find wireless connections nec-

essary. "Some workers. like insurance auditors, can work in untethered mode, so they don't need to pay the premium cost for a wireless network," said Shawn O'Donnell, president of GlobalTech Source Inc. in Melbourne Beach, Fla. O'Donnell's company provides Windows CE-based handhelds with keyboards to insurance auditors.

When auditors are on the road, they use handhelds equipped with preset forms from Ottawabased JetForm Corp. and make a toll-free dial-up connection to Global-Tech's portal to transmit the forms to the network.

But, O'Donnell said, "I can see where a delivery person or many others would want a wireless connection."

PIMM FOX/VOICE FROM THE VALLEY

Novell's tragic tale

LAME SOMEBODY. Anybody. Everybody. But the saga of Novell is almost too sad for words.

Once the world's leading vendor of networking software, the Provo, Utah-

based firm is struggling with competition from Microsoft as well as the explosive growth of Internet networking strategies that threaten to make NetWare a legacy of another era

Sales of NetWare fell short of expectations (thirdquarter revenue was down 17% year over year), partly because of Microsoft's introduction of Windows 2000 but also because of Novell's change in strategy.

The company is trying to address shifts in e-commerce as well as introduce new caching software, but in the meantime, operating

margins are falling. Wall Street has taken only slight comfort from Novell's announcement earlier this month that it would lay off about 900 employees in an effort to cut costs.

Is that enough?

"Look, in the beginning there were no networks: people operated computers pretty much stand-alone," says Philip Sih, an information technology strategy and architecture consultant at Cupertino, Calif.-based DBC Associates.

"When you had more than one computer, people thought connecting them

might be a good idea, and they used stuff like SNA, RJE, MRJE and HASP to do it if they had IBM machines," he adds.

Indeed, in the pre-Novell world, "you had to be an academic institution with bunches of grad students to keep your network running," says Sih. "After 1980 and the PC, everyone wanted to be networked. Now, networking is generic. It's like having a remote control for your television.'

The secular decline of NetWare and its loss of market share is an example of what happens when your business becomes generic.

Indeed, says Jonathan Hoopes, an analyst at Paine-Webber, "without traction in Novell's new line of directory-enabled applications,

we are inclined to lower our sum-of-the-parts valuation. Aside from a buyout, we do not expect any catalysts for significant upside until the first quarter of next year. where we should have a better understanding of where the new business prospects are heading."

less LANs for workers to up-

The Internet and computer networks headed in one direction and Novell stood still, clinging to its proprietary network. So the one problem looming ahead for Novell - like a 10-ton truck - was the turn from propri-

etary branded networks to ones that came bundled with a whole host of applications and services.

A strong balance sheet with \$677 million in cash and cash equivalents means the company won't be on the rocks anytime soon. But can investor and vendor patience continue?

"We believe this whole issue is still a work in progress at best," says Martin Pvvkkonen, an analyst at CIBC World Markets Equity Research.

The path of Novell is a reminder of how "riskaware" corporate decisionmakers and investors have

"Professionals do not want to be led down a blind alley where they have to rely on one vendor," Sih says.

> "They don't want to be locked into higher costs. We want wide product choices, support and competitive pricing. Networking capabilities are a commodity now. We don't buy brands; we buy solutions to real problems."



Computerworld's West Coast bureau chief. Contact him at pimm. fox@computerworld.com.



Fig 1. Small size - yet possesses the deadliest defense on earth



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BUSINESS

Service Firms Track Staff, Projects Using Automation

BY MARC L. SONGINI

Service-based companies are starting to turn to automation to boost efficiency and profitability, just as manufacturers have done with supply-chain management products.

Professional services automation (PSA) software can help companies keep track of their staff, projects and bid turnaround times in days or weeks instead of months, giving them the upper hand with competitors, said David Hofferberth, an analyst at Aberdeen Group Inc. in Boston.

The PSA software market is growing: Hofferberth projects that businesses will spend \$264 million in PSA software license fees this year, and as

much as \$1.3 billion in 2003.

Most service companies have already automated some of their business processes but in only a piecemeal way, said Marylin Muller, an analyst at Summit Strategies Inc., a consulting firm in Boston.

Shearman & Sterling, a global law firm in New York, is installing an eNiku Java-based PSA application to connect lawyers and offices in 15 locations worldwide with one workflow program. The application is made by Niku Corp. in Redwood City, Calif.

Shearman CIO Eugene Stein said he hopes eNiku will help the firm connect billing, marketing, contact management and time and expense processes in one system. Previously, Shearman used a hodgepodge of proprietary and off-the-shelf applications running on a 2,400-user Novell, Windows NT, AIX and Solaris server network. It was a "nightmare" to update and coordinate, Stein said.

"The No. 1 reason for resources management is knowing what [service companies] have, what skills and qualifications, along with their availability and billing rates," said Ted Kempf, a senior analyst at Gartner Group Inc. in Mountain View, Calif.

On the downside, integrating PSA software into a legacy information technology infrastructure can be a struggle, said Kempf.

It's crucial that PSA software be Web-based for mobile access, said Anthony Brady, vice president of e-commerce product development at Mellon Global Cash Management Inc. in Pittsburgh. Continued from page 48

Disasters

out the Red River floods in April 1997, when 108 feet of snow melted, causing the river to crest to 60 feet. The normal flood stage is 28 feet.

"It was an emotional time for most people, and we're a huge corporation, and we reaped the benefits of that," said Custer, an information systems support manager at a Grand Forks, N.D., facility owned by Ecolab Inc., a cleaning and sanitizing company. Allan Schuman, Ecolab's CIO, told employees they would still be paid, and "he stuck by that," Custer said.

St. Paul, Minn.-based Ecolab also set up a catastrophe fund and sent teams to clean employees' destroyed homes.

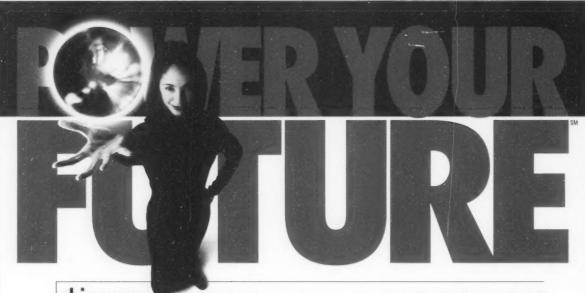
Other plans should include a toll-free emergency number for employees and their families, contact information for the local American Red Cross chapter, shelter provisions for employees and their families and frequent updates about the status of the disaster recovery.

CheckFree's MacKay said companies need to have the right people brought in before a crisis to plan who will perform certain tasks if an emergency hits.

"If [employees] have to choose, they'll take care of their family, and work comes second. You don't have the luxury of getting more people when a crisis hits," he said.

But the key is to be ready, said Darren Irby, a spokesman at Washington-based American Red Cross.

"People see a disaster on TV and say, 'Thank gosh I'm in North Carolina and the fires are in Montana,'" Irby said. "You realize at some point it will happen to you. We're all yulnerable." b



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WORKSTYLES

What It's Like to Work at . . . The Limited Inc.

Interviewee: Rodney Fleming, advanced technology consultant (a research and development position)

Company: Limited Technology Services (LTS), the information technology arm and wholly owned subsidiary of The Limited Inc., whose stores include The Limited, Express, Victoria's Secret, Lane Bryant and others. Main location: Columbus, Obio

Number of IT employees: About 700 companywide in six U.S. locations and Hong Kong: 40 in the advanced technology group

Number of employees (end users): About 13,000

Workday: "Typically, it's eight hours; a really long day would be about 12 hours, but I've been here all night before. Even when I go home, I'm still on the computer each night."

Why does what you do change so much from day to day? "We're trying to go to a more centralized model. Typically, the IT departments here were segmented by the different Limited companies, and each department was making decisions based on what was good for that brand.

"With the formation of LTS, we started trying to corral all those strategies into one, and our immediate goal is to find solutions for all of our applications development that are generic enough to fit the structure of all these different companies."

"All the business models are somewhat different, so we want to find a suite of tools that we can use across each brand." Major IT initiatives: "Lately, the biggest thing is our intranet and Internet architecture schemes, because we're trying to go to a more centralized blueprint. Our intranet is about 8 months old, formally, as we're trying to take it to the next level [and] give it more features that we can leverage across the company."

What impact does the backto-school shopping season have on IT for a retailer? "It's not as big of a deal for us in comparison to Christmas, Valentine's Day and Mother's Day."

IT training: "We don't have a

real formal training agenda on our [advanced technology research] team. We're always looking at something new, so training is an everyday occurrence. I may know nothing on a topic on Monday, and by Friday I've digested eight books on the subject. The only thing that's formally slated is more advanced Jawa training, and maybe Linux certification once that's more settled in the Linux community.

IT bonus programs: Y2k bonuses were as much as 20% of annual salary, and spot bonuses are given for outstanding performance.

The one thing everyone complains about: "Lately, the transition from being small and decentralized to being a large, centralized group. LTS is only about a year old. Everyone's role has changed, and people are always apprehensive about that."

Favorite project: The Victoria's Secret online runway show "I was involved in finding those initial technologies and working on the demo and prototype of the streaming technology for our first webcast in 1998, the year we broke the Internet. [Last year], we were doing actual e-commerce during the streaming media show, and it came off pretty much without a hitch. I prototyped that and developed the architecture."

Percentage of staff that telecommutes: Last month, the company announced a formal telecommuting and flexible scheduling policy for all IT emplayees

proyees.

Little perks: A 40% discount on the company's products; a \$3,000 employee-relerral bonus program; thank-you notes with movie tickets or restaurant certificates enclosed that managers can give out randomly; up to \$1,000 per year in gift certificates to CompUSA Inc. stores for home technology purchases.

"All the individual groups in IT meet up and do things together, like the Victoria's Secret guys got together for a cookout and golfing. My team goes out together a lot after work."

- Leslie Goff Igoff@ix.netcom.com IIM CHAMPY

Blending old, new

HERE'S A NAIVE but seductive proposition making the rounds: If you're a brick-and-mortar company and want to move into the digital world, start a "newco" (or new company). In other words, launch a new enterprise with a structure and culture independent of — and different from — the existing company. It usually involves a mix of new hires and existing staff and a different way of doing business.

Creating a

new business

out of an

old one is

certainly

challenging,

but here are a

few pointers.

But it usually doesn't work.

The assumption underlying the creation of newcos is that the cultures of brick-and-mortar companies won't support new business models, such as digital marketplaces. The cultures of so-called old-economy companies are seen as slow, bureaucratic and risk-averse compared with the cultures of New Economy companies, where the watchwords are fast, just do it and 24/7.

Newcos have also looked attractive because until recently, Wall Street paid a high price for anything digital. So executives saw them as a way to create more shareholder value.

The creation of Barnesandnoblecom is one of the more notable examples of the newco approach and some of its failings. No business can just be a hollow shell once it creates a newco. The fact is, most existing businesses have much to contribute to a new enterprise. If you want to abandon your current business in favor of a newco, you had better plan the former's demise carefully. A sudden parental disappearance can spell doom for a fledgling enterprise.

But creating a newco and ignoring an older business denies at least two realities. A new business requires more than an exciting Web site. It must be linked to the physical world and to legacy systems. This is true even if you're a dot-com start-up selling knowledge or providing entertainment. Information and music have to come from somewhere. And if you're selling a product over the Internet, you must be linked to someone's supply chain.

But creating linkages to the physical world is a challenge. So many companies and IT services organizations choose to focus on only the customer-facing aspects of a newco. The results are businesses that don't work and products that don't get delivered.

It's also important to recognize that in existing companies, the current business pays the bills. Profits from the old build the new. The people and customers of an ongoing business require care. If managers pay attention to only the more seductive start-ups, they may lose the assets they need to succeed.

Creating a new business out of an old one is certainly challenging, but here are a few pointers to get you started.

Begin by considering the character of the new business you want to create. What is its distinctive product or service? What assets will be required, both intellectual and physical, to deliver that product or service? What customer

segment does the new business target? What geography will you serve? The Internet allows you to cover the world, but you may not have the capabilities to do so.

Next, look at your current business and consider what aspects are valuable and possibly already distinctive. What do you want to preserve, both physically and culturally. Companies like General Electric do this exceptionally well. The new businesses GE creates or buys are almost always based on its industry knowledge and often use pieces of existing infrastructure.

The challenge, of course, is always to figure out how to get from the past to the future. Your success will be based on your ability to execute and link your legacy systems with your new face to customers. Don't try to replace or reconfigure all of your old systems. You probably won't have the resources or time to rebuild everything.

Newcos don't come out of nothing. Shape them from the past and for the future. And, while you're doing this, constantly acknowl-

edge the people who have built the business up to now. You need some of them — and you certainly need their profits. •

Champy is chairman of consulting at Perot Systems Corp. in Cambridge, Mass. He can be reached at JimChampy@ps.net.

Darker Days Ahead



The good life of IT is about to change - dramatically - with tough times ahead predicted for those who can't evolve into a new breed of business technologist. By Gary H. Anthes

LL IN ALL, it's going to be a tough world for information technology people, according to a panel of futurists and IT managers who think about the hereafter.

The new IT workplace will be shaped not so much by changes in technology as by changing demographics. A tidal wave of very young workers — many of them from outside the U.S. — will sweep away traditional notions of education, job satisfaction, compensation and lovality.

"The key population will be the Millennial Generation — people born after 1982," says Atul Dighe, senior futurist at the Institute for Alternative Futures in Alexandria, Va. Those people — who are high school seniors now — will be technically savry and

will be technically savvy and team-oriented, Dighe says.

AT A GLANCE

- The shortage of IT workers in the U.S. will vanish within five years.
- There will be a glut of programmers.
- Salaries will fall, perhaps sharply.
- Savvy IT workers will compensate by developing non-IT skills - or they will join the ranks of the digital proletariat.
- m Meanwhile, IT shops in Fortune 500 companies will remake their cultures and retool their employee relations – or they will die.
- Even the high-tech start-ups will have to mutate if they are to survive.

The IT worker shortage will shrink as the Millennial Generation workers hit the labor force, Dighe predicts. They will be a competitive threat to entrenched IT workers by virtue of their numbers alone. There are more of these children of baby boomers than there are above boomers than there are haby boomers themselves.

Meanwhile, Dighe says, a substantial number of aging baby boomers looking for second or third careers will also join the IT labor force.

The 1980s saw the emergence of the college dropout as an important contributor to the IT workforce, Dighe notes, and during the 1990s, high school dropouts began taking IT jobs. "I wonder if

the next killer app will come from an elementaryschool dropout," he says with a laugh.

Indeed, universities offering expensive, lengthy degree programs are "atrophying as we speak," says corporate futurist Thornton May, an occasional Computerworld columnist and chief awareness officer at Guardent Inc., an information security firm in Waltham, Mass. "What am I going to learn at MIT that I'm not going to learn at Akamai [Technologies Inc.]?"

"Octogenarians will be on project teams with teens," May predicts, a phenomenon he calls "Gerber meets Viagra." The groups will require different

Darker Days, page 58

BUSINESSCAREERS

Darker Days Ahead

Continued from page 57

management styles. "The 18-year-old wants to be in the network, learning and contributing. The 60-yearold wants to be recognized for the contributions and play more of an advisory-and-mentor role," he says.

IT professionals will become "contingent workers" who will be brought in to work on a project or to deliver a specific product, Dighe says. Employees will enjoy unprecedented freedom to pursue their own interests, and employers will benefit because it will be easier to vary the size and composition of the workforce, he says.

Any losers? "If you are not very good, there aren't many places to hide," Dighe says.

Minority groups lagging in IT education and training today — such as blacks and immigrants — will fall still further behind, says Joe Coates, president of

Coates & Jarratt Inc. in Washington. Companies will need to tap into this potentially rich but poorly trained talent pool, and the way to do that will be to establish cross-cultural training programs, he says.

cross-cultural training programs, he says.

Non-IT skills will distinguish the most sought-after IT people, says Arnold Brown, chairman of Weiner, Edrich, Brown Inc. in New York.

"Employers will start with the premise that everyone knows the computer," he says. "What you have to know to make you stand out from the crowd is people skills—job. So I there wi

As companies move into the future, they should look to their pasts, says Charlie Feld, CEO of The Feld Group in Irving, Texas. "The new Fortune 500 will be companies that rebuild their cultures," says Feld, formerly CIO at Atlanta-based Delta Air Lines Inc. and Plano, Texas-based Frito-Lay Inc.

"When I started with IBM [in 1966], I had a very strong indoctrination into the values of IBM — what the customer meant, how we'd treat each other, a sense that my work meant something," Feld says. "By the time I left, 400,000 people later, it was like, 'Who cares?'"

Feld says the IT shops in many large companies are stultifying places populated by demoralized people. They are companies that have lost the pride and spirit they had when they began.

"When I go into a troubled IT shop, I assume everyone there is good but has been poorly led," Feld says. "There's no shortage of IT workers, there's a shortage of IT leadership."

And the shortage of inspired — and inspiring — leadership leads to a sort of malaise, Feld says. "IT folks tend to be pessimistic. But if they are going to change the world in this New Economy, they are going to have go back to a spirit of manifest destiny. That's what the start-ups have — optimism almost to a fault," he says.

Human resources departments will fade away, May predicts, because they tend to be overly rigid in rapidly changing environments. "Their rules not only take a long time to comply with, they are actually toxic," he says. Smart IT managers will be their own human resources managers, he says.

Successful IT shops will "celebrate" the contributions of their employees, May says. The common failure to do that is one of the drivers of the open-source movement, where developers get tremendous satisfaction from the applause of colleagues and users. "It's a huge meritocracy, and the reason people play is to score points," he says.

Compensation will be defined more broadly to include nonfinancial items, such as the opportunity to work on exciting projects with like-minded teammates, Dighe says. Strictly financial rewards will increasingly go to those people willing to do less attractive work, and maybe that's what the retrained baby boomers will do, Dighe speculates.

A Surplus of Labor

nart employers will increas

There is a "dark cloud" hanging over this shift from paying people for time and place to paying them by task, Coates says. "We have no good data on the price elasticity of demand for white-collar workers. What if there is a 4% labor surplus in your community, and people start bidding down for the job? A small labor surplus could send the whole wage structure plummeting."

And there will be a surplus of IT workers in the U.S. within five years, Coates says.

"Software [development] is being exported so fast from the U.S. that this shortage can't be anything other than ephemeral," Coates says. Those who argue

that less-developed countries will never be able to match the software skills found in the U.S. "are just whistling Dixie," he

"Software is actually a labor-intensive, not a technology-intensive, enterprise," Coates says. "You have all these educated

but underemployed people in India and Central Europe. Each time they undertake a software job they are building sophistication for the next, more elaborate job. So nothing is going to elude them. In America, there will be a lot of disappointed people when the job they were getting \$50,000 for can be done in India for \$28,000."

Indeed, May predicts, large U.S. companies will recruit much more aggressively overseas and will establish IT schools in less-developed counties.

"The objective will be to extract from these 'colonies' not mineral resources but cerebral raw materials," May says. •

Octogenarians will be on project teams with teens — a Gerber meets Viagra kind of thing.

> THORNTON MAY, CHIEF AWARENESS OFFICER, GHARDENT INC.

TOOLS OF THE FUTURE TRADE

A Man's Car Is His Castle

"I see the automobile as a perambulating office," says Joe Coates, president of Coates & Jarratt Inc. in Washington. Cars will be fitted with a pull-out frame on the passenger side that will hold a flat-panel screen and keyboard. Voice input and output will be common

"This has been so neglected so far, but people [in cars] will be a fair part of the new distributed work-force," Coates says. And there will be software "knowbots." he adds.

For example, "suppose you have a 30-page article and you don't want to read the whole thing. You tell the intelligent agent you want a digest that's 396 of the article, or 8% or 12%. It will produce a reliable summary at that percentage, and the agent will learn your interests," Coates says.

There's No Equipped Place Like Home

■ IT employees will have more advanced IT gear at home than at the office, says Thornton May, chief awareness officer at Guardent Inc. in Waltham, Mass. Employers will offer their ever-growing legions of off-site workers an allowance of, say, \$15,000 to buy their own hardware and software off

The burden of overcoming the resulting complexity will fall on employees, May says. "Those who can't figure it out will be on the slippery slope to second-class digital citizenship," he says. "If it weren't for open protocols and the Internet, we'd all be screwed."

And even those who can make it all work will face a number of cyberperiis. "Security, which is underfunded in the corporate world today, will at least initially be ridiculously neglected in the nomadic, personal technology arena," May says.

Being Good to Your Body

■ Office design will increasingly take into account recent discoveries about human biology, says Arnold Brown, chairman of Weiner, Edrich, Brown Inc. in New York. For example, studies have shown that the brain needs natural light to produce serotonin, a chemical in the brain that aids wakefulness. For that reason, cubicles, which are the typical workspace for programmers now, will see less use, he says.

And stress, the leading cause of on-the-job health problems, could be reduced by giving employees more control over their environments, Brown says. There are hundreds of small things, such as providing windows that can be opened, that would give employees more control and reduce stress, he says.

- Gary H. Anthes



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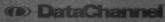
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BURKE
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Finding the right person to oversee an organization's information security efforts can take extra time, money and salesmanship. By Deborah Radcliff

HAT REALLY ATTRACTS
Dale Bachman to a company are "cool toys and great projects." Pete van de Gohm looks for work that offers him "brand-new opportunities in brand-new markets." What draws Dan Doherty to a new job is the opportunity for growth and an energized work environment. For Howard Schmidt, the main attractor is support that's "more than lip service" from the top echelons of the corporation.

These employees hold titles such as chief security officer, national security practice manager, corporate security officer and director of information asset protection.

There aren't many such people to go around. One reason is that senior-level security positions like these call for certifications. The de facto security management certification is the Certified Information System Security Professional (CISSP). Only 3,000 have been issued, according to Jim Duffy, president of International Information Systems Security Certifications Consortium Inc. (ISC²) in Framingham, Mass. ISC² is the CISSP certifying body.

In such a tight information technology labor market, it's no small feat to attract and retain information security executives, according to Tracy Lenzner, president of The Lenzner Group, a Las Vegas recruiting firm that specializes in security. According to a Computerworld survey conducted last month that polled 164 IT professionals on their hiring practices, it takes companies an average of three to five months to find and hire senior-level security managers.

And consider this from a recent survey by RHI Consulting Inc., a Menlo Park, Calif.-based IT temporary job placement agency: 58% of 1,400 CIOs polled said they increased their security resources, including personnel, in the past six months.

Companies attracting candidates from this relatively small pool are doing so by giving them what they want. And what they want isn't so much big bucks — although senior-level security professionals can pretty much name their salaries.

For example, when he interviewed Doherty, a retired deputy inspector brigadier general for the U.S. Army, Nick Tanzi, president and chief operating officer at Metromedia Fiber Network Inc. (MFN) in White Plains, N.Y., said he knew from Doherty's questions

that Doherty was looking for growth, challenge and commitment to security

"In the interview, I was able to demonstrate to [Doherty] that security absolutely meant the difference between success and failure," Tanzi explains. "The other thing Dan focused on was how broad his role would be. I explained to him that security is more than locks on doors, that we knew we needed someone to come in and get our house in order, identify our challenges and address highest priorities first."

Tanzi's honesty about MFN's security issues and needs, along with the opportunity to work in a fast-paced, growing company, are ultimately what reeled Doherty in as chief security officer for the \$75.2 million optical IP backbone company in June.

Such "soft" incentives continue to be the biggest attractors for information security managers, directors and executives, according to the Computerworld survey. Respondents listed the biggest attractors as a flexible work en-

PETE VAN DE GOHM at Enron Energy Services says he looks for work that offers him "brand-new opportunities"

Security Can Pay -Handsomely

Information security officers can draw \$110,000 to \$250,000 in annual salary based on the following factors: company size, company type, location, amount of travel, expertise (e-commerce and business development pay more) and level of ability to load a security practice.

vironment; growth potential; a progressive, security-conscious environment; and guaranteed support for security from corporate officers.

"The factors I've noticed that matter to senior-level candidates include workplace diversity, exciting technological problems to solve and the connection of their work to the customer," says Doug Merrill, senior vice president of information security at Charles Schwab & Co. in San Francisco.

Who's Interviewing Whom?

Even before senior-level candidates walk through the doors of a potential employer, they're screening for signs of those factors.

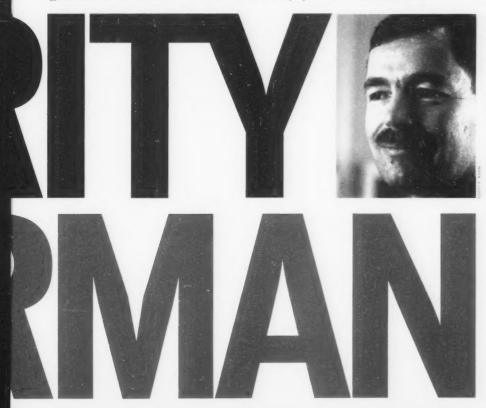
For example, when van de Gohm was leaving the U.S. Air Force security police at the end of 1998, he studied technical crime associations and vertical industries so he could better match his strengths with those industries' particular needs.

So, van de Gohm says, when he interviewed for a security management position at a chip maker in the Southwest, he knew the company's biggest security threat would be chip theft. Since he had a strong background in physical security, he agreed to an interview. But a few days later, he was more intrigued by Houston-based Enron Energy Services Inc.

"This was a brand-new company entering a brand-new market, tied to a brand-new thing [deregulation]. The similarities between the environment here and the environment when I first went to join the Air Force Strike Fighter program were incredible," van de Gohm says. In November 1998, he accepted the job of director of information asset protection at Enron.

Likewise, Doherty's skills in physical and IT security led him to consider the job at MFN after he had been recommended by an employee of MFN's chairman. His research led him to a similar conclusion.

Having recently acquired AboveNet Communications Inc., a Vienna, Va.based Internet connectivity company, MFN was setting up deals with Dulles,



SECURITY SUPFRMA

Va.-based America Online Inc. and San Francisco-based Webvan Group Inc and was laving fiber-optic cable all over the country.

"I knew there was an opportunity for growth here," says Doherty.

Explains Tanzi, "We're building fiber-optic networks in 67 cities between North America and Europe. The first thing we're concerned with is best practices in physical security, because if someone were to tamper with one of our fiber backbone cables, we'd lose customers and revenue. We also needed someone to be our advocate to legislative and governmental bodies to really understand the new world that we live in and the risks of data theft."

While Tanzi was scoping out Doher ty for these qualities, Doherty was checking out the company, especially the employees he saw casually in the hallways and in their cubicles. The employees seemed genuinely excited about their work, he says, which was enough to finally sway him to take the job at MFN, instead of a post at one of the two defense contractors that were also interviewing him.

Schmidt, corporate security officer at Microsoft Corp., says he likes to interview the interviewer. When he interviewed at Microsoft, he says, he was particularly interested in support from above

"I asked [the CIO and the security teaml: 'Who does this position report to? What executive sponsorship exists? What's the escalation procedure if things don't get done? What's the potential for hiring?" " says Schmidt, who was recruited out of the Air Force's Office of Special Investigations, where he directed the computer crime and information warfare training programs, among others.

Top-Down Buy-In

Schmidt says that after a few reorganizational bumps in his first year, his unit now gets the top-down support he needs, which is why he's stayed put for three years. While not every security objective is realized - security and business must give and take to work together - the most telling sign of support was when Microsoft's CIO merged physical and data security into one department last month.

This top-down support is also what has drawn a veteran security manager, who asked to not be identified, to security management jobs. He has worked in security management positions for the private sector and the federal government. In hiring interviews, he says, it's difficult to pick up on the true level of support for security.

"If you know somebody inside the organization already, they might be able to give you indicators," he says. You need to talk to the network administrators, for example, and check their level of cooperation.

Inversely, the hiring company also benefits when candidates know someone on the inside. In fact, employee referral was among the top three methods employers use to find information security candidates, according to the

Computerworld survey. Doherty has already pulled in someone he knew from the Army's Criminal Investigative Command's computer investigative unit, which Tanzi says makes him even more happy to have hired Doherty.

But even more companies are cultivating security leadership from within. according to the survey. One such company is Sprint Enterprise Network Services (ENS), an IT consulting firm in Houston. Sprint ENS recently promoted Bachman to help develop and manage a newly spun-out security practice group at the national level.

A year ago, Bachman, a former crypto breaker at the National Security Agency, wanted to live closer to his family. So he posted his résumé on the Web and interviewed with three companies. Bachman, who has a doctorate in mathematics, took the consulting job at Sprint mostly because of the training and educational opportunities.

Meanwhile, Sprint was looking at him, especially with his advanced degree, as someone to put on a fast track to management. "We're always looking for someone to groom for security management positions for our global projects," says Bob Robinson, practice principal at Sprint Elv5.

You can't expect people with seniorlevel security management skills to fall into your lap, Robinson says, so career development is crucial. Sprint starts by hiring people with the basic certifications - Cisco Network Administrators, Certified Cisco Internetworking Engineers or even a Check-Point Fire-Wall engineer. Those with manage ment potential like Bachman are identified, trained and mentored.

Not only do training programs help solve the problem of where to get se curity professionals, but they also help keep them. Because of such programs. Schwab's attrition rate for its IT staff was less than 10% last year.

"We focus on retaining talent through internal growth. We're constantly asking our employees, 'What do you want?

What incentives have you used to attract

NO OF RESPONSES

TOP SEVEN ANSWERS

Flexibility

What do you need to refocus our value proposition so you can get what you want out of your job?' "Merrill says. "It's really expensive to find people, so it's better to retain them.'

Bachman is currently developing a security management curriculum for Sprint. He says his goal is to grow his own crop of security project managers to support his new organizational and service objectives.

And, he says, as long as he can create, build, design and work hands-on, he'll stay around awhile. "Call it geek pride," Bachman says. "I think a geek feels as much pride in his creation as an artist does with his painting."

Next Candidate.

Publix Network Corp., an Internet service provider in Hamden, Conn is preparing to go public in the next six months. But until now, the company's security oversight has been handled by Chief Operating Officer Peter Zackowski, who hired a parttime security consultant on an asneeded basis.

Like all start-ups, Publix isn't flush with money. About all it can offer a new security director is stock. Zackowski says he decided to bypass human resources and go through a headhunter. The headhunter saw the salary range and then sent candi-

dates accordingly.
"The first candidate shows up in the largest pair of Fabu [elephantleg) jeans that really showed his plumber's side and props his feet up on a chair. After I introduce myself, he says, "When do I start?" " Zackowski says. "The next candidate believed that an unwashed body was a spiritual statement. He ked. During the interview, he lifted his arm and sniffed, like he was lling a delicate flora.

Even if Zackowski could get beyond these behaviors - and, he says, he considered it - he couldn't hire either candidate, because neith ed the skills he claimed to

The message here: Woe to the small company that can't justify, afford or attract senior-level sec rity professionals.

"We changed our request for a more managerial type on Aug. 7, but so far no one's walked through the door," says Zackowski. "The headhunter said he's sending three people, but I haven't even seen a résumé." - Deborah Radcliff

Hiring Security Officers

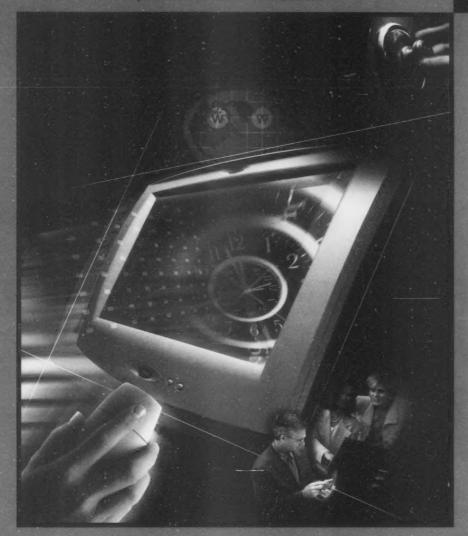
How long did it take you to fill your senior level information security position, from defining the job description to hiring the person?



What were the three most important criteria

used in selecting the final candidate?	Growth potential Progressive, security- conscious environment				
TOP THREE ANSWERS NO. OF RESPONSES					
Technical and practical knowledge of security					
issues and trends	Guaranteed support and				
Previous experience at integrating security and	understanding for security among company officers				
core business processes	Year-end bonus				
Ability to execute	Sign-on bonus Location				
61					

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says the entire sales division is going to lose

its PCs and switch entirely to wireless PDAs.

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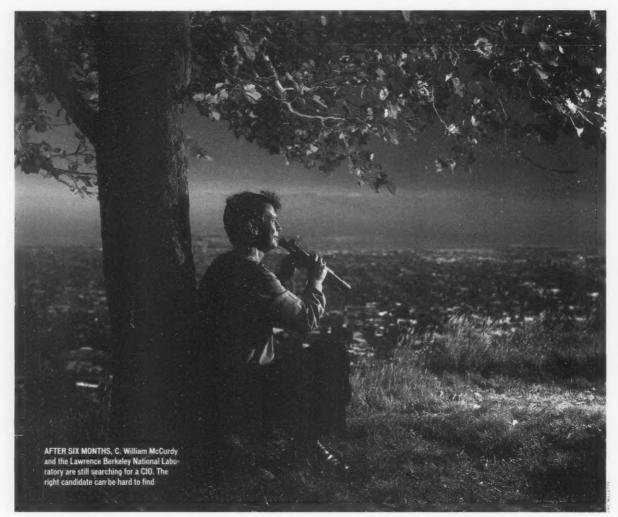


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Searching For Insiders

Finding industry-specific IT leaders isn't impossible, but it doesn't come easy. By Melissa Solomon

ANTED: A SCIENTIST WHO'S NOT going to be doing much science. It's a job that C. William McCurdy, associate director for computing sciences at Berkeley, Calif.-based Ernest Orlando Lawrence Berkeley National Laboratory, has been trying desperately to fill, without much success.

"We've been looking for six months," McCurdy says of the search for a new laboratory CIO. "It's driving us nuts."

The problem is that Lawrence Berkeley needs a candidate who can guide the vision for the lab's information technology infrastructure while still providing management and business leadership.

In addition, the right candidate must be an advocate for scientific computing at a laboratory that's involved in such high-stakes research as the human genome project and that's home to one of the world's largest supercomputing centers. And to do

Continued on page 71

Technology Brief

Enterprise Collaboration Tools Pack a Powerful Punch

By S.J. Holmes

hich one of these files is the latest version?
That's a common question heard in any company forming virtual teams, automating their sales force or creating collaborative work environments. A wrong answer to this question, and its consequences, can be expensive in terms of time, money, resources and client goodwill.

Unfortunately, until recently, solving data sharing problems meant spending six figures and months of consulting and IT implementation time to create document management systems.

A useful solution to the problem is Web-based file storage systems that let anyone with Web access and a browser retrieve documents from a Web site. However, for corporate users, most of these services lack any document management capabilities. So while they solve some data access issues, questions about document versions and

their distrib u t i o n remain.

"To be honest, there are a lot of file storage services out there that looked promising, but they didn't help us manage

the changes to our documents or help us collaborate on them," says Joe Workman, project manager at Bellevue, Wash.-based CNA Architecture.

That's why companies such as

CNA Architecture are selecting Punch Networks Corp.'s Punch WebGroups solution for enterprise collaboration.

"Only WebGroups had the sophisticated versioning and management tools we needed," says Antonio Martin, senior project manager with Meridium Inc., a Roanoke, Va.-based plant asset management firm.

"We are much more than a Web file server," says John Williams, director of marketing for the Seattle-based Punch. "We offer many of the capabilities of highend document management systems at a fraction of the price and with turnkey implementation."

Best of both worlds

The Punch WebGroups product provides clients like CNA Architecture and Meridium with the best of Web-based file access and robust document management features with minimal implementation.

To use Punch WebGroups, a user creates a log-in name and password at Punch's Web site and receives two WebGroups and up to 2MB of storage — free of charge.

Next, the user adds ot her members to the WebGroup and assigns the maccess privileges, such as the ability to upload and down-

load documents or only view them. Each of these users automatically receives an e-mail inviting them to the Web site.

As users with the appropriate privileges upload new and updat-

ed files, Punch WebGroups automatically notifies every user in the group of that fact via e-mail.

Unlike other Web-based file services, WebGroups also tracks and archives each file version and maintains an audit trail of users who have downloaded a file. This allows managers to see, at a glance, whether customers and team members

"Only WebGroups had

the sophisticated ver-

sioning and manage-

ment tools we needed."

senior project manager

are current

With the files archived. users have access to older versions without storing multiple copies on their own PCs. In addition, Punch WebGroups also has a unique

binary comparison feature. When users log in to the site to retrieve an updated document, a Java applet compares the version on the user's machine with that on the Web server — and only transmits the bits of data that have changed.

That feature was especially useful for CNA Architecture, which was clogging low-bandwidth connections among its customers, architects and project teams with megabyte-heavy CAD files that had to be retransmitted when even a tiny change was made. The Punch WebGroups binary comparison feature has eliminated network bottlenecks while enhancing communications.

"WebGroups has given CNA and our clients the freedom to securely store and access our projects from any location, streamlining our project management process and increasing company output," says Workman.

Punch WebGroups is available via the Internet in an application service provider model, which Punch Networks can also "private label" for companies. Punch WebGroups for Enterprise is a client/server version of the tool with extra management features, including configuration files so administrators can customize the interface, add company logos, set user limits and more. It also provides integration with existing Lightweight Directory Access Protocol (LDAP) directories and

has a full suite of Web-based administration tools.

"WebGroups
proved its value to
us during the
months we
accessed it from
Punch's Internet
site, and we would
have continued to

use that version," says Martin of Meridium's switch to Punch WebGroups for Enterprise. "But as a matter of policy, we try to keep as many applications and as much of our corporate data as possible behind our firewall."

Because users may try Punch WebGroups for free at Punch's Web site, they can thoroughly learn and test the system before it's installed on the corporate network, reducing the IT burden. "We evaluated the product and demonstrated its benefits without heavy involvement from our IT staff." says Martin.

Punch WebGroups' license fees are \$6,000 per 100 users. That's inexpensive compared to mainstream document management solutions — and to the benefits the product provides, including reduced project cycle time.

"The fact that I spend less time trying to manually update my team members means I can focus on other tasks," says Martin. "Multiply that experience across 50 people and the result is increased productivity, better software and better customer service." #



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BUSINESS

Continued from page 68

so, he must be a scientist himself, says McCurdy.

"There is a very high emphasis placed on the scientific capabilities of managers," he says. "It makes a scope of a job that's really interesting and challenging."

In the meantime, McCurdy continues his search, all the while acknowledging to himself that he's up against great odds because of the dearth of CIO candidates with the right mix of business and technology credentials and scientific know-how.

But headhunters who specialize in high-level IT placements seem far more confident of McCurdy's chances than he does. In fact, they say, it's quite common for IT executives to have extensive training and experience within a particular industry or a specialized sector, such as biotechnology or discrete manufacturing.

"I'd say it's very common. Whenever I get a CIO search... the criterion is you're always looking for someone who's had the operational side," says Karen Simpson, an account manager who specializes in IT searches at Ajilon, a Toronto-based executive search firm. "A CIO for a bank is probably not going to be as effective going from a banking environment to a retail environment. There's a big learning curve."

The best strategy for finding a top-level IT executive with extensive industry experience, say headhunters, is to look within the walls of your major competitors.

"What Berkeley would want to do would be target other laboratories' [CIOs] and cold-call them," advises Tammy Anderson of Lysen Anderson Executive Search Inc. in Atlanta.

But Lawrence Berkeley has an added challenge, explains McCurdy: It's located in Berkeley, Calif., a stone's throw from Silicon Valley, where IT executives are paid top salaries and the cost of living is among the highest in the nation.

And because the laboratory is a nonprofit institution funded by the U.S. Department of Energy, there's not much room for salary negotiations. The salary range for laboratory directors runs between \$115,560 and \$184,800 — and only a very few of the laboratory's national division directors fall at the top of that range, he says.

"Someone who has corporate experience of this level would expect something a little bit higher, plus some level of corporate equity," he says. "We are at the whim of the Department of Energy."

Strategies companies can take to expand the pool of candidates, says Anderson, are to look for lower-level professionals with industry-specific experience who are ready for advancement, and to cold-call people who aren't job-hunting. "Maybe 10% to 20% of the talent pool may be surfing the Web looking for a job," she explains. "If you try to attract the cream of the crop among the 80% as opposed to the 20%, you're going to see a higher caliber of candidates."

Selling the Work

Reputation is the biggest selling point for positions at the American Civil Liberties Union of Northern California, says executive director Dorothy Ehrlich.

"I think all people in nonprofits will find it hard to compete with the private sector," she says, "but there tends to be some self-selection... among those who want to work for justice and to bring their own technical experience to bear."

The San Francisco-based branch of the civil rights organization recently filled a position for a new computer systems manager who will be responsible for implementing and maintaining the

organization's long-range technology plan.

"It's a very important position. They absolutely have to be technically qualified," says Ehrlich. "But we want someone who is committed and cares about our goals."

The ACLU advertises positions through both nonprofit and mainstream publications. When an attorney position opens up, applications come flooding in because many lawyers have always dreamed of working for a high-profile political organization like the ACLU, says Ehrlich. In contrast, an IT-related position "is a little harder. We don't get hundreds of applications. It's a highly specialized area."

But, she adds, "We cast a very wide net and you end up with people primarily interested in providing this technological expertise, but who always wanted to work for the ACLU."

A bigger challenge than recruitment, she says, is retaining employees.

"People are lured back into the private sector very often," says Ehrlich. "It's genuinely hard for people to pay the rent and work in nonprofit."

Lawrence Berkeley, like the ACLU, relies on the impact of its work in attracting job candidates, says McCurdy. The new CIO, he says, could play a role in work such as experimental cosmology and supernovae experimentation, "both of which I think have the potential of landing someone a Nobel Prize."

The CIO would also work with the laboratory's director for its portion of work on the human

Casting the Net

There are several strategies for finding a top-level IT executives with extensive background and expertise in a particular industry, say headhunters. They include:

- ► Targeting CIOs from your major competitors.
- Spending about six months researching the field of potential candidates.
- Identifying qualified professionals who aren't looking for jobs, and cold-calling them.
- ➤ Considering industry insiders in lower-level positions who are ready to move up.
- ► Placing advertisements in mainstream and industry publications. Melissa Solomon



genome project. "It provides a range of work that will propel somebody's career if they take this job and can do it for five, 10 years," he says.

"There will be no great scientific laboratories in this century without an information technology infrastructure," he adds. "That part of the vision belongs to the CIO; in that regard, it's very attractive."

Room to Grow

While industry experience is critical for many CIOs, some companies keep an open mind about candidates so they can attract the most qualified executives.

Paidos Health Management Services Inc., a Chicago-based national disease management company that specializes in neonatal services, is in the midst of a search for a CIO. The job description calls for a candidate who can provide leadership for the development of IT systems at Paidos as well as an "understanding of finance, business operations, clinical processes and managed care." The ideal candidate would have a degree in health care and/or computer science.

But Paidos hasn't limited its search to those within the health care profession, says Linda Hodges, executive vice president at Hersher Associates Ltd., the Northbrook, Ill.-based IT health care executive recruiting firm that's conducting the search. Organizations like Paidos that "feel they have enough depth or strength that they can allow a person adequate time" to get up to speed on health care issues try to look beyond the industry for top talent, she says.

"It depends on the position and the organization," Hodges says. "Health care experience in some organizations is critical. . . . But we have seen a number of CIOs make the transition from other industries."

One high-profile example is Joseph Smialowski, the former Sears, Roebuck and Co. CIO who jumped industries in 1998 to become CIO at BankBoston (which has since merged into Fleet Bank and is now known as FleetBoston Financial).

But Smialowski is the exception to the rule, says Anderson.

At San Francisco-based Blue Shield of Northern California, health care experience was a critical factor in the company's search for a CIO, according to Chief Financial Officer Paul Swenson.

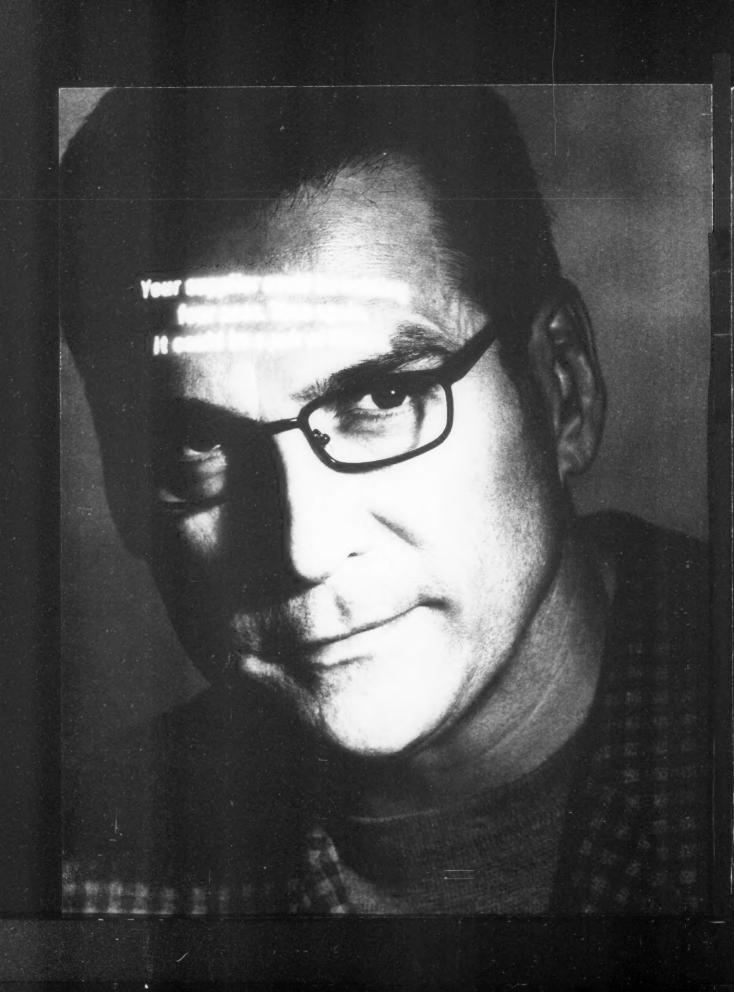
"For us, it was important to have somebody who just understands what we were doing," he explains. Blue Shield hired David M. Bowen as CIO last spring after a formal search that lasted nearly a year and yielded only four relatively serious candidates.

One edge to hiring Bowen, a former CIO at San Francisco-based hospital chain Catholic Healthcare West and at Baptist Health System Inc., a hospital and health maintenance organization network in Alabama, is his ability to help Blue Shield navigate its way through the Health Insurance Portability and Accountability Act, which was passed in 1996 and is expected to take effect within the next year. The technology regulations are aimed at protecting the privacy and security of patient information.

Because of his background, Bowen will also be able to communicate the company's IT infrastructure needs to the doctors, who are notoriously resistant to technology, says Swenson.

But before it found Bowen, the search committee started doubting its chances of finding the ideal candidate.

"Can you find the right balance of person who brings technology, health care and management [expertise]?" asks Swenson. "There's not many of them out there."



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The Power to Know...



ANY PEOPLE harbor dreams of pursuing some other career, but practicalities usually rule out experimenting with new types of work.

But information technology professionals who have long toyed with the idea of teaching are in luck. Many universities and colleges are seeking those who have real-world experience to conduct classes in technology or even business. You could teach those who want to learn programming, gain a vendor certification such as Microsoft Certified Systems Engineer or better understand how business operates on the Web.

Although the pay is relatively low, the rewards can be high, including personal satisfaction and even the chance to meet potential employees, business partners or customers.

Finding an Opportunity

But first, a teacher needs a classroom. For some, finding one involves calling department heads or even human resources personnel at local schools. Many, though, come across opportunities through word of mouth.

"My old manager used to teach at a community college and asked if I wanted to teach a class," says Michael Moore, a network analyst at insurance company network Harleysville Group Inc. in Harleysville, Pa. Each semester, Moore teaches a networking class to help people get Microsoft certification. "I spoke to the dean of the college of business and computing, gave him my résumé and interviewed with him, did some impromptu teaching las part of the interview process] and was hired."

David Friend, a former engineer who is CEO of Boston-based teleconferencing provider eYak Inc., stresses the importance of finding the right atmosphere. "I took a year out and taught at the Sloan School at MIT," says Friend, who was asked by a member of the faculty to co-teach a class in business and entrepreneurship.

"I think it's important to be in an environment where the students are stimulating. I can't imagine I would have been happy teaching someplace where the students aren't as bright as they are at MIT," says Friend.

A school typically is ready to help a would-be teacher learn how to develop a syllabus and find resources on campus. But instructors had better bring their own time-management skills to schedule the time needed to prepare teaching materials, write tests and grade students' work.

"I didn't know how I was going to do it," says Jorden Woods, chief technology officer at GlobalSight Corp. in San Jose, who is teaching a course on implementing global e-commerce for San Jose State University's e-commerce management program. His schedule



TEACHING ON THE SIDE

IT managers who have dreams of teaching as a second career are in luck: Colleges and universities are desperate for your real-world technology and business expertise. By Erik Sherman

had him working 16 hours per day, Monday through Saturday, plus half a day Sunday, making it difficult to prepare a course syllabus. "There were a lot of late nights where I was in the office sometimes until midnight or 1 in the morning," he says.

Aside from the long hours, Woods says, he felt a lot of pressure at first. "I was nervous, especially because in this day and age, students are much less complacent. They want a lot more personalization, and they want it now," Woods says. But teaching has given

him a professional advantage, he says, providing him with speaking opportunities, exposure for his company and, as in Friend's case, the chance to meet potential employees.

Continuous Learning

There are other pressures, too.
"There is always the pitfall of the aggressive student," says Timothy Smith, vice president of strategic development at Kinkos.com Inc. in Alexandria, Va., and a former government employee who teaches at the Defense Intelligence

The College View: Dying to Meet You

While schools look for certain characteristics in teachers, the foremost at the moment might be visibility.

"Last January ... I was desperale; "says Dr. Lue Bender, chairman of the business and computer science division at Montigomery County Community College in Blue Bell, Pa. "About 10 days before the semestre began, I had 10 sections of courses unstaffed in the computer area." A massive – mail campaign helped him find the people he needed, but Bender's experience shows that instructions are in high demand.

"The field is growing much laster than we're producing teachers," says MaryAnn Robbert, chair-woman of the computer information systems department at Bentley College in Waltham, Mass. "The industry is offering a lot more than we are, and the job market is hot."

Instance is not.

Desperation doesn't mean capitulation. Applicants must have the technical chops to teach their special-ties, notes Robbert. Those who are generalists in IT should consider introductory classes, as higher-level instruction requires more depth of knowledge in a sub-ict. Whatever the case, never embellish credentials.

"Something that turns me off are phonies: people who come in and say "I've done that," and when you've talked to them, [they] have done nothing," Robbert says. There are always faculty members who will see through that.

Robbert - and other deans and chairmen - say they also look for "an interest in teaching."

Pay is typically far below what an experienced technologist can make, so colleges want to find teachers motivated by factors other than money. People can determine whether they have the bug by giving presentations and offering to perform free guest lectures.

Remember, too, that as IT touches more aspects of life, there are teaching opportunities outside computer and business programs.

and business programs.

Information technology has become a key feature for us, "asys **Gus. Friedrich**, dean of the School of Communication, Information and Library Studies at the New Brunswick, N.J., campus of Rutgers University. That means opportunities for IT professionals, and also

some necessary attitude adjustments.

"One of the things I try to explain is that these students are really bright, but they fre not the same as you," says Friedrich. "Don't self them short, but don't make the assumption that they ire just like you. You're going to have to bring them into (the subject).

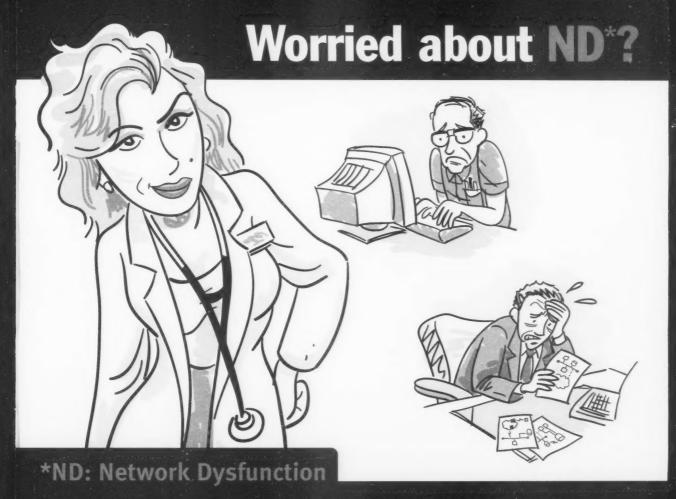
- Erik Sherman

College in Washington. His classes are about how to use the Internet in intelligence gathering and dissemination. "They want to get you and prove, one way or the other, that you are not as smart as you think you are," he says.

That means spending time keeping up with industry developments. "I probably spend 10 to 15 hours a week [keeping current] through literature, through research, through talking to people," Smith says. "And because of my role at Kinkos, I talk to a lot of vendors, potential partners, other Internet start-ups. I'm fortunate that my job keeps me in the flow of what's current."

In fact, presentations at Kinkos.com are as useful for Smith's teaching as they are for his day job. "I love the folks who come in and give me the generic market information," Smith says. "I'll go, 'Can I have that slide? Can I use those?" "

Sherman is a freelance writer in Marshfield, Mass.



Symptoms Include:

- ✓ Premature application time out
- ✓ User satisfaction concerns
- ✓ Stability issues
- ✓ Performance guarantee problems
- ✓ Response time degradation
- ✓ SLA guarantee dilemmas
- Loss of bandwidth control
- ✓ Poor efficiency
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BUSINESSCONSULTING



Getting the Word Out

Consultants find writing and speaking to be an effective way to build business – and expertise. By Leslie Goff

AVE CROWLEY, an independent SAP consultant in the northern Michigan hamlet of Traverse City, went global last year. Less than a year after launching his independent consulting practice, Acre Wood Consulting LLC, he picked up a gig in Australia and was getting inquiries from companies in India.

He says he owes his instant international reputation to a marketing tactic that cost him essentially nothing and through which he actually made money. The globalization of Crowley's practice took off after he published two articles about SAP consulting.

"Without [my] being published, they would never have found me," Crowley says of his Australian client. "I didn't have an international presence, and I don't have a lot of people working for me. But writing positioned me as an expert in my field and brought me attention — and at no cost."

In fact, the writing opportunities just

fell into his lap, Crowley says. A colleague he met at an SAP user conference later passed his name along to an editor at *Inside Technology Training* magazine who interviewed Crowley for an article. At the end of the interview, the editor invited him to submit an article on what makes a good enterprise resource planning team.

Spurred by the success of that experience, Crowley wrote a first-person column that he sent to Contract Professional magazine, which published the submission. He earned fees for both stories.

Crowley's coup highlights how publicly establishing your expertise can be an effective and inexpensive route to building and expanding a consulting business. Publishing articles, getting a book deal or making speaking engagements helps you put yourself out there and also helps you get a much better handle on your own skills.

"Categorizing a lot of the technical information that I've accumulated over the years has helped me put it all together into a more accessible format," says Robert Parkinson, a consultant in Roseville, Calif., who co-authored *Basis Administration for SAP* (Prima Publishing, 1999).

"I was surprised at how much I knew. Once I sat down and actually began writing, the information actually flowed more easily," Parkinson says. "It helped me in my day-to-day consulting to cover areas that I had worked on previously but not regularly. In essence, I produced a diary of a lot of SAP knowledge that I've accumulated over the years."

Publishing and presenting also establishes credibility with potential clients, easing the process of lining up new gigs, consultants say. When a prospect contacts you after reading your work or hearing you speak, you've already sold your skill set. You can get down to the nitty-gritty of discussing the client's problem and how you can solve it, rather than explaining why you're the right person for the job.

For Jim Gray, a principal at Conval Software Inc. in Moorpark, Calif., that's one of the key benefits of the time he logs preparing public presentations. "The job interview can be about a solution," Gray says. "You've already gotten in the door and past the initial introductions. I can't say what impact it has on the bottom line, but it does help with gaining clients."

Gray says the real appeal for him is getting a message out. "There's an evangelistic impetus behind it," he says. "When you're a consultant, you work with a lot of companies, you see the same problems over and over and know that solutions are available. I'm motivated to see if we can address the problem and see people have more successes."

Building Business

For many consultants like Gray, the hard part of writing and presenting isn't finding something to say but finding the time to say it.

You have to incorporate it into your regular schedule, says Stephanie Smith, an independent applications developer doing business as GWIJ Systems Inc. in Plano. Texas.

By keeping up with the latest topics, Smith says, she's ready to tackle a new presentation whenever the opportunity arises. That way, if she gets a request for a proposal to present at an upcoming conference, she already has fresh material for a bid. "It's also a good thing to do when you're on the bench," she adds.

Writing a book may offer the biggest payoff — financially and in terms of exposure — compared with writing articles and making speaking engagements. But it's also the most demanding and time-consuming venture.

Publishing and Presenting: A Primer

Getting started in publishing and presenting usually happens the old-fashioned way by networking. Someone you chat with at a local user group meeting happens to pass your name along to an editor, who calls you to solicit a column. The column lands in the hands of a conference planner, who asks you to appear on a panel. The panel moderator is editing a book and asks you to contribute a chapter. The publishing company is so impressed that it hirse you to do your own book.

Here's some advice to keep in mind when you're starting out:

- Start small. If you've never written or spoken in public before, contribute an article to a local newsletter or arrange to speak at a local user group meeting. With a few clips and presentations behind you, you can tackle a national publication or conference presentation.
- Focus on what you know don't encumber the new experience of writing or speaking with a topic that's unfamiliar to you.
- Make the research for an article or presentation part of your regular routine. Keep a journal of problems you've encountered at work and how you resolved them, or keep an archive of news clips on topics that interest you. Then, when an opportunity comes your way, you already have material to develop.
- m Don't measure the benefits monetarily. Unless you write a best-selling book, publishing and presenting aren't likely to bring in huge fees. Consultants who regularly write and make public appearances say the payoff comes from broadening their exposure, establishing credibility with prospective clients and building self-confidence. —Leslie Goff BOURCE. COMPLET FORM INTERVIEWS WITH DAVE SON, AN BAY CONSULTANT IN ROBEYLEC, CALLET JIM SON, AN BAY CONSULTANT IN ROBEYLEC, CALLET JIM SON, AND STEPPARE, MOST TERMANER BATTER PARKING.

Parkinson notes that he had to put his personal life on hold during the 10-month process of writing Basis Administration for SAP. He spent most of his free time writing — before and after work during the week, as well as several hours on weekends.

But the book has led to other writing opportunities, as well as to speaking engagements. "The amount of time and effort put forth in the book was done as a labor of love, with the intent of promoting my consulting career," Parkinson explains. "The monetary benefits are few and far between — you don't get rich writing these books. The in-

tent was to enhance my consultancy . . . [and] the response has been so positive that I think it will become a necessary part of my practice."

Goff is a freelance writer in New York. Contact her at lgoff@ix.netcom.com.



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Technolog

For NaviSite, There's No Such Thing as Second Tier

For this service-minded hosting company, every one of its e-commerce clients deserves the same thing: to be treated as if its business depended on its web site

By Randy Cronk

based NaviSite Inc. is a leading provider of outsourced managed web and application hosting for companies conducting mission-critical busi-

ness on the Internet. It's a company with a special perspective on what it takes to be a successful host. That's because, until 1997 NaviSite was CMGL Inc.'s internal hosting and infrastructure provider.

CMGI is a network of diverse vet interconnected compa-

nies all holding leadership positions, or the promise of leadership, in Internet-related businesses. (In 1999 alone, CMGI launched or acquired 35 such companies.) In other words, NaviSite "grew up" hosting Internet sites for some of the world's very demanding and sophisticated

After being spun off from CMGI in February 1997, NaviSite has continued to have a special empathy for companies that are dealing with the hyper-growth of the Internet age. For one thing, it understands the difference between just renting real estate

and providing a genuine service.

Just ask Pierre Bouchard, NaviSite's director of product marketing. "The way this industry started," he says, "was to provide co-location services. You bring in your own equipment. You install it. You run it. The only things you get from the hosting provider are

> space, power and an Internet connection.

Our customers initially were companies that CMG had invested heavily in - so we were strongly motivated to provide them with more than the simple colocation basics. They wanted. in fact needed. us to become a part of their

team and take responsibility for managing critical parts of their website. So management isn't something we've just added, it's something NaviSite grew up with. It's in our genes."

Having a good attitude

That kind of attitude counts a lot with New Economy companies like MarketMax, a Burlington, Mass.-based developer of software for the retail marketplace. In 2000, the company launched Market4Retail.com, a site that lets retailers and manufacturers collaborate online to develop interactive merchandise, assortment,

promotion and space plans, and optimize product selection in order to better meet consumer expectations. Market4Retail.com is hosted by NaviSite.

Service was clearly a key differentiator, according to Ken Brame, chief technology officer for MarketMax. He says, "One of the challenges on MarketMax's part was that loutsourced web hostingl opens up a completely new world of not being there every day standing over the server. I've never seen the physical server where my site is running. Doing work remotely 100% of the time was definitely a new experience for the company and produced a new set of challenges.

He recounts one experience he had tracking down an errant e-mail. "It was one of those forms the customer fills out that sends an email back to our marketing department.

Somewhere along the way the e-mail was getting

dropped. NaviSite was diligent about

tracking the e-mail through the different servers to find where it was getting lost. That sounds like a pretty simple problem — but it's a classic illustration of why it's really important for all your partners to talk to each other even when they're not physically in the same room.

Problem solving

NaviSite was diligent about tracking the e-mail

through the different servers to find where it

was getting lost. That sounds like a pretty sim-ple problem — but it's a classic illustration of why it's really important for

all your partners to talk to each other even when they're not physically in

-Ken Brame, CTO,

the same room

To ensure that kind of talking, NaviSite has a program called Problem Resolution Management or PRM. "PRM starts with people in the network operations center who are first to intervene when there is a problem and escalates from there," states Bouchard. "This is an attitude that says, 'I'm gonna be diligent — once I've detected a problem I'm going to get it resolved no matter who the right party is.' We might escalate it to the customer but we're still going to stay in the loop until the

problem

solved."

PRM is something every customer gets even those who may only rent space from NaviSite. "When a customer has a problem, they have an expectation that we will get in there and help them fix it. They don't care if it's not on our price list. PRM is a security blanket.

Whatever sense of urgency needs to be there will be there. There's no such thing as second tier.'

Randy Cronk is a freelance writer

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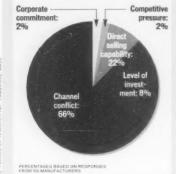
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Channel Conflicts

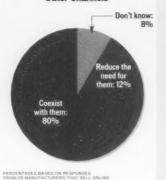
DEFINITION

Channel conflicts arise when a new venue for selling products — such as the Web for selling goods or services — threatens to cannibalize one or more existing conduits for selling goods within the same organization, such as a retailer or a manufacturer.

Biggest Issues Facing Manufacturers That Sell Online



Impact of the Web on Other Channels



BY MINDA ZETLIN

MARKET HOLDINGS LLC, a Stamford, Conn.-based e-commerce consulting firm, was hired last fall to help a multibillion-dollar chemical manufacturer explore opportunities for selling its products directly over the Web. The company's internal e-commerce team had already recommended direct Web sales as a way to better manage its supply chain and interact more directly with customers, says eMarket co-founder Alyse Terhune

But when the team presented its proposals to the company's CEO, Terhune says his response was terse: "We've done business with our distributors for 30 years, and I certainly don't want to sell around them.

I don't even want to discuss it."

In this niche of the chemical industry, five distributors handle most products, so angering even one could threaten a good chunk of eMarket's revenue. "You had a team charged with exploring the Web as a sales channel, when in fact, the guy at the top was not willing to do it," says Terhune.

Snared in the Web

That CEO isn't alone. He was concerned about channel conflict — when a new sales venue threatens to cannibalize an existing one at the same organization. Channel conflicts have existed for years, but the term has gained prominence in the past year or two as the launch of e-commerce operations has raised a new set of concerns for many companies.

For example, about a year ago, General Motors Corp. in Detroit attempted to buy back some car-dealer franchises as a possible step toward selling directly over the Web. Dealers protested so adamantly that both GM and Ford Motor Co. in Dearborn, Mich., spent a lot of time at a recent industry convention reassuring dealers that the automakers wouldn't sell directly to consumers. And in a recent survey by Cambridge, Mass.-based Forrester Research Inc. of 50 consumergoods manufacturers, 66% cited channel conflict as the No. 1 obstacle to selling online (see chart).

Retailers, too, are often daunted by channel conflict. In May 1999, Bob Moog joined Paramus, N.J.-based Toys R Us Inc. as CEO of its e-commerce site, Toysrus.com. He left after just three months over what he terms "philosophical differences" with other members of the senior management team and is now CEO of AreYou-Game.com, a San Franciscobased online retailer of puzzles and games

At Toys R Us, Moog says, conflicts arose over a finite supply of its most popular items. "I wanted every Sega I could get and every Barbie doll I could get. And the corporation's position was that they had an \$11 billion [brick-and-mortar] company, and they couldn't sacrifice that for the start-up. There was internal confusion about how to best maximize both opportunities."

In hindsight, says Moog, Toys R Us executives made the right call. "Twelve months ago, it appeared that to have Toysrus.com come out and be a market leader and to do an independent [initial public offeringl would be a very valuable thing for the shareholders," he says. "But now, the market isn't valuing online companies the same way it was then. It's much more important for Toys R Us to maintain and improve its core business. So I think the Toys R Us management team looks smart today for those decisions.

Fashion Statement

Levi Strauss & Co. decided to bypass retailers altogether when it started selling its products online in 1998.

"We launched e-commerce sites for Levi.com and Dockers.com," recalls Jeff Beckman, a spokesman for the San Francisco-based company.

"Fashions were changing pretty rapidly in the late 1990s," he explains. "We saw a resurgence of interest in khaki, and younger consumers were looking for more fashion-forward types of denim products. We saw an opportunity to create relationships directly with consumers."

But Levi courted channel conflict by forbidding retailers from selling its products online as well. Late last year, the company pulled the plug on sales at its online sites, which now offer only information. Instead, the Web sites direct customers who want to buy over the Net to online retailers.

On the other hand, channels can complement one another, so that a successful Web site can have a beneficial ripple effect for a company and its partners. For instance, visitors who go to AreYouGame.com can "ask us about a product, and if for some reason we don't have it available, we ask where they live and we send them to a retailer in their area," says Moog.

"What many retailers fail to understand is that manufacturers' catering to consumer needs online pushes the brand and the product and creates a happy consumer, who in turn will continue buying," says Lisa Allen, an analyst at Forrester Research and author of the channel-conflict report. Ultimately, she notes, customers will decide where and how they want to buy products. Manufacturers and retailers should be prepared to sell to them in the venue of the customers' choice or risk losing them to competitors that are.

"The wise approach is to recognize that the goal is to serve the customer and not to preserve artificial turf boundaries," Allen says. "In some instances, channel conflict should crumble."

Zetlin is a freelance writer in Woodstock, N.Y. Contact her at minda@mindazetlin.com.



The goal is to serve the customer and not to preserve artificial turf boundaries.

> LISA ALLEN, FORRESTER RESEARCH

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Feature Article. The explosion of the new e-conomy has irrevocably altered the best practices for all businesses, from global Fortune 50 RFP for Your companies to shoestring startups. While you can't take your **E-Business** eye off the ball where business fundamentals are concerned - witness Wall Street's recent puncturing of dot-com companies that thought profits were for the birds - many long-held business beliefs are now at least open to question.

> With technology driving business, IT plays a biggerthan-ever role in the corporate decision-making process. IT organizations are leveraging their long-standing knowledge of requests for proposals (RFP) to e-business. RFPs have always been a key part of choosing the right partners, so using them to create your e-business initiative makes sense.

> Creating an RFP will help IT ensure a successful transformation. Given the importance of e-business, it's no surprise that businesses are turning to companies like WorldCom, which provides facilities-based and fully integrated services to facilitate e-business and e-commerce in the digital generation. With its experience and broad range of offerings, WorldCom is the ideal partner for any company.

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Online Coming Months

Upcoming stories you will find on WorldCom **Solution Center in** October include a feature story on WorldCom's Interact, which provides customers with the ease of purchasing corporate telecommunications over the Web. Another story will highlight WorldCom's Customer Interaction Solutions (formerly named Call Center Services).

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THE INTERNET IS YOUR FRIEND, BUT IT DOESN'T HAVE TO BE YOUR ONLY FRIEND.

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WORLDCOM.

Dear Career Adviser:

I am fortysomething with a recent MBA in e-commerce marketing. I also have more than five years of experience in mainframe programming and application design, backed up by another degree in computer science. I'm interested in consulting and research-type work —

working no more than approximately 40 hours per week — in a challenging e-commerce dotcom environment. Do I have the right skills to be hired?

- HIGH-IMPACT PLAYER

Dear High Impact:

Your technical background might make a positive difference as you compete for new jobs, but not necessarily, cautions Kay Meyer-Coe, a staffing manager at Cross-Commerce.com Inc., a preinitial public offering (IPO) e-commerce infrastructure company in San Francisco.

"First, you'll be competing against other new MBAs, and second, the multitier development environments of the typical dot-com are very different from your mainframe background," she says.

In addition, you'll need some hands-on experience to gain professional credibility as a consultant before this career path really opens up to you at a high level.

"Right now, you're best off finding a job in technical product marketing with a good mentor to guide you, so you can really see how things work in an e-commerce environment," says Meyer-Coe.

Also remember that your 40-hour-per-week workload maximum could turn off most pre-IPO companies that require motivated employees who can work long hours.

Dear Career Adviser:

I work in the Middle East and intend to move to the U.S. for better job prospects. I have a stable job and a month's leave when I can go to the U.S. and hopefully secure a job. I'm a Microsoft Certified Systems Engineer and a Cisco Certified Network Associate with four years' experience. I've tried using sites like Monster.com to no avail. Will I get a better response by physically being there?

— U.S.-BOUND

Dear Bound:

Whether you're outside the country or just in another

state, you're obviously at a disadvantage in the job hunt if you aren't physically present. Being available to interview and start work is what counts.

"Today's job market moves quickly, and positions open and close in a matter of days," says Steven

Scheer, operations manager at Craigslist.org, a widely known San Francisco-based high-tech job board.

Although your technical skills are certainly in demand and employers will be interested in snagging you, several issues make you a "high-overhead"

candidate. First is the issue of your relocation. Many employers simply don't have the money or time to finance those expenses, let alone to handle your a new employee's visa status.

If you're just trying to relo-

cate within the country, you can improve your chances by giving potential employers advance warning of your plans to be available for local interviews and your commitment and timetable for relocation. If you are from outside the country, you'll have better luck by starting to work for a multinational U.S. company in your home country and then keeping your ear to the ground for stateside opportunities.

Dear Career Adviser:

I heard that a report by Forrester Research Inc. says twothirds of dot-coms are expected to fold within a year or two. How does this forecast affect computer careers? What

about middle-aged people who are thinking of computer programming as a second career? — WORRIED



FRAN QUITTEL is an expert in high-tech careers and recruitment. Send questions to her at www.computerworld.com/ career_adviser.

Dear Worried:

This definitely is a job market of the haves and the have-nots based on technical know-how and, secondarily, youth. Some dot-com

businesses may be folding, but new and more mature companies are expanding. They are hunting hungrily for experienced talent, which is even tighter as baby boomers retire and technology jobs increase. On one hand, if you're a programmer who can use interfaces to connect all levels of applications or a serverside Java engineer, a frontend Web developer or an expert on the Java 2 Enterprise Edition platform suite or the XML standard, you're riding the gravy train, says Dan Grosh, a senior San Francisco Bay area recruiter who's worked for large and small companies alike.

But the challenges can be insurmountable if you're middle-aged and trying to enter the programming field with minimal technical skills. Firms are trending toward increasingly younger technical teams, says Grosh, and young companies don't have the bandwidth to offer technical mentoring to newbies.

Therefore, if you are an experienced techie seeking a high-profile career at a dot-com, use your initiative to keep up-to-date with frequently changing technology trends. You're always worth more if you can hit the ground running. And if you're starting from the ground up, pick one high-profile technical skill that's much needed and learn it inside out.

Do schoolwork, homework and volunteer work. Exhibit a staggering willingness to learn and a voracious eagerness to pick apart applications on your own time. Then seek your future at a larger company. There, project teams are more likely to offer you the opportunity to learn in groups.

BRIEFS

GetThere Lands American Airlines

Online travel marketplace GetThere Inc. last week said American Airlines Inc. has joined its network, which targets businesses and offers air, hotel and car services directly, bypassing traditional computer reservation systems. The GetThere marketplace also includes British Airways PLC. The Hertz Corp., Marriott International Inc. and United Air Lines Inc. Menlo Park, Califbased GetThere was acquired last month by rival Sabre Inc. in Fort Worth, Texas, for \$757 million.

Bid.com Wins Media Bid

Mississauga, Ontario-based e-commerce service provider Bid.com International Inc. last week announced it entered into a three-year agreement with News International PLC, the flagship media business unit of London-based The News Corp. and publisher of a number of newspapers, including The Times, The Sunday Times, The Sun and News of the World. Bid.com will provide e-commerce services to enable News International's online ventures to sell reader offers and branded products through the Internet using a blend of fixedand dynamic-pricing formats.

CEOs Narrow Their View of ClOs

Building customer relationship systems is information technology's single biggest contribution to competitive advantage, according to The World IT Strategy Compass Census 2000, a survey of 400 CEOs from some of the world's largest corporations. The survey was commissioned by Reston, Va.-based management consulting firm Compass America Inc.

CEOs who participated in the study also said they believe that ClOs' key tasks are to provide systems to support business strategy, keep users and managers satisfied, run an economical IT operation,

build a sound IT infrastructure and introduce relevant new technologies. CEOs are less convinced that CIOs' responsibilities should include transforming the business through IT or contributing to the business.

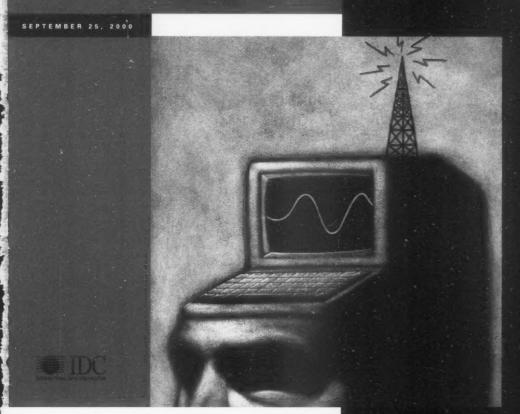
Dell Names New VP

Dell Computer Corp. in Round Rock, Texas, appointed Russell Holt as vice president and general manager of the company's storage systems business unit

Holt will oversee worldwide development and marketing of the firm's PowerVault storage products. Prior to his new position, Holt was vice president and general manager of Dell's departmental and workgroup PowerEdge servers and director of engineering for the company's server products.

Index Shows Job Growth Slowing

The economy is still growing, and college students still have many job options, but the growth is slowing, according to Los Angeles-based Jobtrak Corp.'s Monthly Index, which monitors job-posting data at colleges and universities across the nation. The August index shows a 6.9% increase in job openings posted last month with an average starting salary of \$36,607 compared with the same period a year ago. This is down from a year-to-year high of 50.4% in March.



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CONVERGENCE

LOGICAL POSSIBLE

For decades, vendors and users have talked about converged voice and data networks, but did nothing about executing them. That is until now. The technology, applications and vendors needed to make voice and data convergence work have matured, making it possible for it to work. The adoption of convergence took so long to happen because of the following reasons:

By Deborah Cooper

- Slow technology evolution
- · Lack of application development
- Minimal customer demand
- Embedded investments and entrenched business processes
- High cost of ownership

While a global infrastructure has appeared to support a range of convergent environments, those five reasons are also affecting the rate at which businesses adopt convergent applications.

Technology evolution

After nearly two decades, the infrastructure now exists to support convergence. And to the surprise of most CIOs and their IT departments, it's the telecommunications carriers that are providing the most extensive engines of integration. This group brought to market the technologies for communications protocols which lie at the heart of all convergence.

Now that integrated transport of voice and data exists, the next step is to enable voice conversations to take place in real-time — even when transported over an ATM or IP network. One example of how this is happening is Cincinnati Bell, a local telephone company with about one million access lines (compared with BellSouth's 17 million). It acquired long distance carrier IXC for its data-focused IP backbone to deliver voice services virtually for free over the data backbone. The integrated company is now called Broadwing.

Today, there are numerous devices on the market that are now capable of taking advantage of wired and wireless communications technology. Cell phones are gaining new features every day. Some already support access to the Web, while



laptop, notebook and palmtop computers have already incorporated wired and wireless high-speed modems to increase their users' flexibility in accessing data.

In the realm of convergence, enterprises seek to open their channels of communications to a broad range of potential suppliers, customers and employees. At the same time they must maintain the security of their proprietary information. The multimedia-capable public networks support companies' efforts in this direction.

Application development

Within the enterprise, communications technologies, especially IP networks, enable their users to build intranets to host many corporate applications like finance, human resources and customer records.

Convergent applications link separate applications to each other creating a unified environment to transparently draw on multiple databases to accomplish their tasks. Customers can access information about current or potential orders, employees can find the most up-to-date information regarding corporate policies. Currently moving into the commercial marketplace, unified messaging provides an excellent example of convergent functions such as linking voice, data, fax and other communications media through a single box to users and accessible by telephone, PC and Web access devices such as a palmtop with a browser.

A few pioneering service providers have introduced these unified messaging services which pull together textand voice-oriented messaging capabilities. Other systems and services, called enhanced or integrated messaging, can tie together multiple voice-mail boxes or multiple e-mail and fax services, but they don't represent true convergence because they do not combine multiple access media.

Because unified messaging serves the convergence of wired and wireless voice, wireless data (fax and Internet) and Internet e-mail messaging, service providers operating in all three arenas will introduce similar services.

IDC recognizes that unified messaging services may not find automatic acceptance unless the service providers take into account current user behavior. This generally requires users to have the same number for both talking and messages — preferably the user's existing phone number.

Looking at unified messaging software aimed at enterprise applications, IDC estimates that in 1999 there were 799,000 software mailboxes worldwide. But IDC forecasts the total to jump up to 14 million enterprise unified mailboxes by 2003.

Service providers also support this convergent application. IDC believes that wireless/remote access users will drive initial market demand. IDC forecasts the total wireless and remote access user segment will be 7 million in 2002. These business customers are major users of high-tech communications technology. They depend on cell phones, PCs. PDAs. fax machines, voice mail and other sophisticated communications solutions.

Customer demand

Without a doubt businesses are looking favorably at convergent applications. However, most of these applications remain in beta. Still, as more companies take advantage of these basic applications, the data necessary to prove the business case for installation and widespread SPECIAL ADVERTISING SUPPLEMENT

Deborah S. Cooper writes for and advises to some of the nation's largest consulting and marketing firms, telecommunications companies and technology magazines and Web sites. She has written articles for CIO and Computerworld, authored white papers for Business Research Group and International Data Corporation and developed vertical market newsletters for numerous telecommunications, financial services and healthcare companies.

deployment will become more available. That's when an increasing number of companies will begin to experiment with convergent applications.

Partially responsible for driving these experiments is the Internet. Look at virtually any Web page and you'll see text, graphics, video and sound integrated on the page, all aimed at communicating a message — all transported as data along the communications infrastructure. Making their way from the host to the access devices, these Web pages get transported over a mix of protocols including framerelay. ATM, IP and the circuit switch telephone network with a relatively high level of integrity and security.

Viewed this way the Internet represents the epitome of voice, data, graphics and video convergence. While the Internet plays critical roles in many business processes, its convergence technology has yet to be integrated into most mission-critical applications. There are some beta tests going on that enable Web surfers to reach call centers and speak with an operator while viewing catalog pages, but this type of application is still in its infancy.

Embedded investments and entrenched business processes

Companies' existing investments in installed equipment and software stand in the way of growth for convergent technologies. Add to this the fact that businesses slowly change their operating methods and you get glacial adoption rates. Just think of IDC's earlier example regarding the telephone number. Businesses and residential customers don't want to add new telephone numbers to the growing list they already have — home phone, home fax, business phone and fax. e-mail address at home and at work — and

neither do their contacts. This is the main reason that unified messaging has been slow to catch on. The same is true for other convergent applications. Businesses recognize the benefits of convergence but when they calculate added costs for training, new equipment and software, they don't always justify the cost.

With bridges built to existing applications, access provided to disparate databases, and a messaging system in place that potentially integrates multiple media, enterprises must deliver the transaction management essential to conducting business on the Web. Transaction server middleware products bring that solution to the e-business environment. Finally, companies can invest in object middleware that allows distributed application programs to interoperate while delivering the necessary management capabilities to keep the components working together.

Enterprise interest in moving towards these sorts of products has attracted information access, application and collaborative software suppliers. They want to help their customers implement and design corporate portals that will be used within a business or for a business and its key suppliers, according to IDC. This development parallels the growth of consumer portals such as Yahoo! and Excite on the public Internet but these convergent applications deliver private portals accessible only on the company's intranet or extranet. These corporate portals enable authorized users to access search engines for both company and external databases, provide employees with access to recent executive speeches (video and audio) and enable corporations to bring together geographically disparate employees in corporate meetings hosted on the

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This White Paper on Convergence was created by Computerworld's Custom Publishing group. Comments on this supplement can be sent to managing editor Stefanie McCann at (508) 820-8234 or stefanie mccann@computerworld.com. This White Paper, as well as other custom supplements, can be viewed online at www.computerworld.com.

company's intranet.

These platforms for convergent access and applications are rapidly gaining popularity. IDC surveyed 500 network managers in the United States and Europe in 1998 and found that more than 59% of their companies had an intranet and that more than 75% of companies with more than 2,500 employees had one.

Other platforms for using voice and data convergence are consumer and enterprise portals. IDC draws clear distinctions between the two types of portals. Consumer portals provide a variety of services designed to attract and keep the attention of buyers whose vital statistics are collected by the company to be used to enhance and personalize the customer relationship. Enterprise portals support end-user access to corporate information and applications and target the employee or business partner. But they also aim at building better relationships between employers and employees and between employees and suppliers (via extranets). These improved relationships could lead to increased employee and trading partner loyalty.

These relationships and applications — unified messaging, middleware, businessware and corporate portals — emphasize the importance of pulling together the wide range of information and applications that corporations have amassed over the years. This convergence of sources, tools and media will give companies new ways of conducting business and carrying out mission-critical applications.

Cost of ownership

None of this convergence comes free, but enterprises must consider more than dollars and cents when approach-

ing investments in convergence.

Enterprises must clearly focus on their goals for doing business in the next century. They must evaluate the processes in place, the technology they have for supporting those processes and what changes they will make in the short term and long term. In other words, planning convergent applications is no different from planning any other technology investment.

Convergence isn't all or nothing. At one end of the spectrum, enterprises can integrate interfaces and browsers to separate related applications (probably the fastest and least expensive first step to convergence). Fully integrating complex databases with customer service, human resources or production applications fall at the other end of the spectrum — sophisticated and expensive to implement. Using familiar browser technology, customer service representatives could access inventory systems, shipping databases and pricing information to provide rapid answers to customers. In the same way, employees could access their company's financial systems to manage their business units and report results.

Taking advantage of convergent technologies and solutions creates an image that the enterprise is a forward-looking one — it takes technology and runs with it — into a brave new world. This image can instill customer and employee loyalty. Customers want to be identified with efficient and modern suppliers: employees want challenging and exciting workplaces. Implementing and maintaining the new convergent applications address these points. And they pave the way for improved performance and future growth. •

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LET'S MEET By satellite

Heavy-equipment maker Caterpillar has long been a proponent of videoconferencing. Now, new technologies, including satellite connections, may make virtual meetings more viable for a large number of companies. • 88

HOSTING TESTS

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Jude says he hopes his new smart cards will solve password-security problems, but the project gets bogged down with a confusing array of hardware, software and standards options. > 90

HANDS ON

Put Apple's new Cube on your desk, and your image may never be the same again. It redefines both cool and classic. The Cube served our reviewer admirably, capably handling his workload — and it's quiet, too. > 92

BETTER VIEW OF Enterprise Data

Once the realm of scientists, data visualization

software is emerging as a serious business analysis tool for corporate information technology. The tool lets users quickly spot trends in multidimensional data through the use of 3-D graphics. • 94

OUICKSTUDY

With two or more CPUs in a single box, symmetrical multiprocessing (SMP) can boost your computing power provided you have the right software. SMP is a parallel computer architecture in which multiple processors run a single copy of the operating system and share the memory and other resources of one computer. Find out more. > 102

EMERGING COMPANIES

Datasweep's new manufacturing-execution system is built from the ground up to support Web updates — a unique feature in this well-established market. Datasweep also boasts faster implementation, but entrenched, larger competitors are racing to meet the challenge. Can this upstart keep its edge? 104

SKILLS SCOPE

Smart employers say they know they can never find enough skilled IT workers in the job market, so they're creating their own — from nontraditional backgrounds inside and outside their companies. Find out more about high-tech firms making nontechie hires. 106



MIGRATION MADE EASIER

POWERFUL TOOLS are available to simplify the job of setting up new PCs for users while preserving their customized settings and data. This new breed of enterprise utilities, called PC migration tools, is especially helpful when users are also migrating to a different operating system, such as Microsoft's Windows 2000.

Caterpillar to Launch Satellite Videoconferencing System

Heavy-equipment company melds voice, video with latest in satellite networks

BY JAMES COPE

HEN a large earthmover. bulldozer or other piece of heavy equipment breaks down on the other side of the world, contractors often don't have the luxury of reverting to a backup and may not have on-site engineers who can troubleshoot the problem. That's one of the reasons Caterpillar Inc. in Peoria, Ill., relies heavily on videoconferencing to bring experts together in an instant.

Now, said Caterpillar systems architect Gus Otto, the heavy-equipment maker is preparing to launch a videoconferencing system co-developed by Andover, Mass.-based PictureTel Corp. and Intel Corp. The system will be married to satellite equipment and services from Spacenet Inc. in McLean, Va., a wholly owned subsidiary of Gilat Satellite Networks Ltd. in Petah Tikva, Israel.

Otto said Caterpillar will standardize on the PictureTel 900 PC-based videoconferencing system, which runs over switched telephone systems or IP networks.

PictureTel began shipping the system in August. It is priced between \$10,000 and \$15,000 per installation, which Otto said is about one-third the cost of PictureTel's Concorde system.

The Big Picture

Otto said he hasn't always been so enthusiastic about PictureTel. The company tried to hang onto its old high-end, high-price strategy instead of embracing new technologies that would bring prices down, he said. In fact, Otto said he pretty much gave up on PictureTel and started leasing Intel's PC-based TeamStation for conference room setups at Caterpillar. TeamStation costs \$6,000 to \$9,500, depending on configuration.

Over the past year, Picture-Tel made a turnaround, Otto said. The company teamed up with Intel to develop the video and audio compression algorithms that make up the core of the Picture Tel 900.

PictureTel is also now the exclusive distributor of Intel's videoconferencing systems as well as those developed jointly by the two companies.

Good Sound, Good Picture

Contrary to popular belief, Otto said, developing an algorithm that provides acceptable video over IP hasn't been the main problem. The issue, he said, has been achieving good audio quality with acceptable video.

The algorithms that Picture-Tel and Intel developed provide audio in the 14-kilohertz range, less than the 20 kilohertz of CD-quality audio but still four times that of a standard telephone call.

Otto said he's excited by the prospect of coupling this latest videoconferencing technology to Spacenet's forth-

coming satellite system. It's a PC-based system with a satellite dish that has both receiving and transmitting capabilities.

The low-end system, which will be available to consumers and businesses, has a down-stream capability of 500K bit/sec. and an upstream capability of 153K bit/sec.

A spokeswoman at Spacenet said pricing would be based on bandwidth and service levels specified by the customer. The product will begin shipping early next year, she said. Brownlee Thomas, a senior analyst at Giga Information Group Inc. in Cambridge, Mass., said that until now, acceptable videoconferencing required 384K bit/sec. in both directions. That translates into

three 128K bit/sec. Integrated Services Digital Network lines on each end of the connection, which can cost a company \$500 to \$600 per month.

PictureTel Vice President Ned Semonite said the new compression technology in the company's equipment could provide excellent audio and good video running over a 256K bit/sec.connection.

Otto said that in his tests, he saw acceptable results at even lower speeds.



CATERPILLAR ENGINEERS will soon be able to troubleshoot problems with heavy equipment via a new satellite videoconferencing system

Compuware Introduces Remotely Hosted Software for Internet Testing Service

Users say hosted services cut time, costs

BY JULEKHA DASH

As more vendors offer Web performance testing through a hosted model, analysts say it can be a cheaper alternative to performing the function inhouse as long as users don't mind relinquishing control of their Web information.

Last week, Compuware Corp. in Farmington Hills, Mich., launched PointForward, a remotely hosted Web testing service.

Hosted testing services are gaining popularity, said Billie Shea, an analyst at Newport Group Inc. in Barnstable, Mass. According to Newport Group, the market for load-testing tools and services reached \$214

million last year, an increase of 55% over 1998.

Load testing via the Internet is a faster and cheaper alternative to setting up a test lab, purchasing the hardware and hiring personnel, said PointForward beta tester Sean Moshir, CEO of PatchLink.com Corp. in Scottsdale, Ariz., an electronic-business infrastructure management software firm.

Compuware's pricing varies according to the type of testing users want, but it generally ranges from several hundred dollars per month to between \$3,000 and \$10,000 for one-time service.

Moshir said he couldn't estimate how much money he has saved using a hosted service but noted that he has cut at least two weeks out of the testing cycle. By simulating multiple users logging on to Patch-Link's Web site, Compuware measures how much traffic the site can handle and checks for bottlenecks.

Points of Interest

Compuware's PointForward

- tests for the following:

 Which site links are
- How many users the site can handle
- Performance monitoring for example, download times

Because Web testing is an expertise that most organizations need periodically rather than all the time, it's a good alternative that companies can rent rather than purchase, he said.

Difficulty in finding people who have Web site testing expertise is another reason why hosted Web testing is gaining popularity, said Richard Heiman, an analyst at International Data Corp. in Framingham,

The skills for this kind of work include understanding how an application performs after an unexpected surge in traffic, he said.

For example, "Al Greenspan makes an announcement, and suddenly everyone wants to trade stocks in the next 10 minutes," said Heiman.

Other vendors have announced Web site testing services within the past year, including Segue Software Inc. in Lexington, Mass., and Mercury Interactive Corp. in Sunnyvale, Calif. •

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Enterprise Intrusion Protection at the Speed of Light"

Smart-Card Project Off to Rough Start

Hardware, software and industry standards befuddle; parade of consultants only adds to Jude's confusion

Security

Y WEEK has been spent mostly in the company of consultants. I seem to have had every vendor and consultant

stereotype visit me since Monday: from the nervous, commission-hungry salesman to the professional, soberly suited management consultant with an encyclopedic knowledge of a very narrow area.

The subject was smart cards. As regular readers know, I'm trying to implement smart-card-based access control for Windows 2000 PCs so that I can do away with passwords wherever possible. This should be relatively simple, because Windows 2000 is designed to support smart-card access. But the project

is made more complex by having to be compatible with our proximity-card building-security system.

Digging Into Smart Cards

Over the past few weeks, I've been on a steep learning curve. I've been scouring the Internet for Web sites that explain smart cards and smart-card technology. I've also been reading all the Microsoft Corp. white papers I can find. The white papers are in fact rather clear and concise, despite some occasional lapses into jargon.

From what I understand from the smart-card Web sites and the blandishments of the consultants, I have to choose the smart-card chip, the chip's operating system, the type of smart-card reader and a certification authority. From there, it's just a matter of system configuration.

I'm least sure about the type of smart-card chip I need. I have a wide choice of manufacturers, but I'm not yet sure how to distinguish among the different chips they all offer. I know the chip needs to conform to the industry

standard, ISO 7816, and I know that they offer different amounts of RAM, from IKB to 16KB, but after that, I can't distinguish among them on anything other than cost. (Perhaps readers can

enlighten me in the Computerworld.com Security Manager's Journal forum.)

The ISO 7816 requirement is absolutely fundamental. This is the international standard that determines the basics of how a smart card should be designed; most cards and card readers are built to this standard. If I specify a card that doesn't meet the standard, I'll have a very hard time finding other compatible systems.

Windows 2000 smartcard authentication is based on X.509v3 certificates, so I know that each

card will have to hold one of these certificates. This can take up to 3KB of the available memory. After that, any remaining memory is there to be used by future applications.

Although we don't have any other applications planned for the cards yet—it's very early—I believe that smart cards are such a useful technology that many other applications will be found as soon as the technology is there. Since 16KB cards cost only about 10% more than 8KB cards, and since the card cost is going to be such a tiny fraction of the cost of the whole project, it makes sense to go for the largest possible cards right from the start.

The card operating system is an easier decision — particularly because there seem to be only four real choices: Sun Microsystems Inc.'s JavaCard, London-based Maosco Ltd.'s Multos, Microsoft's Windows for Smart Cards or a proprietary operating system.

I want this system to be as flexible as possible so it can be used easily for new smart-card-based systems as they arise. Therefore, I want to avoid proprietary operating systems wherever possible.

Multos seems be the highest-security operating system, most commonly used in retail financial systems such as payment cards.

I'm not sure about JavaCard yet, and I haven't found anyone with a well-researched opinion on it. Windows for Smart Cards is young and relatively untested. However, knowing Microsoft, by the time I'm ready to roll it out in nine months, it will be like any other Microsoft operating system — not pretty, not very elegant, but functional, popular and capable of working with almost anything else on the market.

The User Triumvirate

Smart-card readers are turning out to be a bigger problem than I imagined. We have three main types of users: the average paper pushers (that's me!) with a relatively standard desktop PC, keyboard and monitor; the road warriors, who take their laptops wherever they go; and the front-line operations staff ers, who are highly stressed, highly demanding and have very specialized hardware and software configurations.

That means we need three different types of readers. Paper pushers can use almost anything that fits in the back of their PCs. Road warriors need something light, unobtrusive and easy to use. Operations staffers need a reader that can take some punishment and can fit into their often unusual environments.

I put these requirements to every consultant I met, but I got incomplete answers at best. One finally suggested a French company called Gemplus SA. Gemplus seems to have products that meet most of these requirements. I've had time only for a brief call to one of the company's salesmen, but he was impressively calm and well-informed and came up with simple, helpful answers to all my questions. The impression I got was that people at Gemplus had seen these problems before and solved them. I'll have to investigate further.

The certification authority might be the hardest requirement of all because it will involve the most office politics.

As I mentioned above, Windows 2000 authentication is based on digital certificates. A digital certificate essentially consists of two things: the public key of an asymmetric cryptographic

THISWEEK'SGLOSSARY

ISO 7816: The International Standards Organization's (ISO) published standards for the design and manufacture of smart cards. Although ISO standards aren't enforced, vendors wishing to interoperate with other companies in the smart-card marketplace usually comply with this standard.

X.509v3 certificates: This refers to the international standard Directory Authentication Framework (ISO/IEC 9594-8, or ITU-T X.509). This standard describes an authentication protocol based on public-key cryptography and using digital certificates. The name X.509v3 is commonly used to denote digital certificates that comply with this standard.

LINKS:

www.smartcardcentral.com/ directory: Smartcardcentral.com Inc.'s online buyer's guide to smart-card industry vendors is an excellent resource. It includes links to vendor Web sites, names of consultants, reports about smart cards and smart-card technology and even a list of trade shows.

http://java.sum.com/products/java card: Sun's JavaCard Web page contains detailed technical product information, white papers and developer information.

www.multos.com: The Multos site is operated by Maosco Ltd., a consortium that develops Mulios and backs it as an industry smart-card standard for financial and retail applications.

www.microsoft.com/windowsce/ smartcard/default.asp: Microsoft Corp.'s Windows for Smart Cards Web page includes a tutorial, tool kit data sheets, white papers and other data.

www.gemplus.com: Gemplus SA's Web site includes both smart-card product information and a tutorial.

key pair and a statement from a trustworthy source that the corresponding private key — the other half of the key pair — is known to one person only. This asymmetric cryptographic key pair consists of two keys; one public, one private. Anything encrypted with the public key can be decrypted only by using the corresponding private key, and vice versa.

In our situation, that trustworthy source is known as a certification authority. And it isn't easy to create something worthy of so much trust.

[■] This journal is written by a real security manager, whose name and employer have been disguised for obvious reasons. It's posted weekly at www.computerworld.com to help you and our security manager ~ let's call him Jude Thaddeus ~ better solve security problems. Contact Jude at jude tellocos.com or click on Computerworld.com's Security Watch community forum to participate in discussion topics.

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As the Macintosh once did,
Apple's new Cube redefines what
a computer can look like - without
sacrificing performance.
By Tom Thompson

Clearly, A Computer

my office, looking like no other computer I've ever seen. A silvery cube, 8in. to each side, rests inside a clear plastic column almost 10-in. tall. On top are two slots and an elliptical grate plus a power-on light that glows pearly white beneath the plastic. The gray apple on one side tells the story: This is Apple Computer Inc.'s G4 Cube. All the connecting ports are located on the Cube's bottom. A small cutout in back lets you snake cables from the Cube to the speakers, your display and any peripherals.

The review system came with the base 64MB of RAM, a 20GB

hard drive and Mac OS 9.0.4. Apple also included its 15-in. LCD display, with a resolution of 1,024-by-768 pixels, that connects to the Cube via a single proprietary cable that carries power, digital video and Universal Serial Bus (USB) signals. The display has two USB ports on the back intended for the keyboard and speakers.

84 CUBE, \$1,798

The LCD panel is absolutely gorgeous, with crisp images as bright as those of a CRT monitor and a wide 160-degree viewing angle. I had the

display next to a window, and even with the afternoon sun on it, the screen was bright and easy to read.

To put the system to sleep, you simply tap the screen's glowing power-on indicator. To wake it, tap the indicator again.

The machine comes with two softball-shaped Harmon Kardon speakers connected to a transparent digital-audio module that plugs in to a USB port. The module has a jack for stereo headphones. Audio CDs and MP3 files sounded great on the high-quality speakers, and computer games had new inwact with the stereo sound.

I played several DVDs in the system. You simply stick a disc

into the frontmost slot, and a motor pulls it into the Cube. When you are finished,

push the new Eject key on the keyboard and the DVD pops up like a slice of toast. The DVD video looked great and was well-matched with the stereo sound.

However, any other use of the system caused the video to stall momentarily. While this design certainly shows off the G4's computing prowess and eliminates a part, it makes for a lot of processing by the CPU.

I connected the Cube's Ethernet port to a 3Com Corp. hub/Integrated Services Digital Network LAN modem and was on the Internet in minutes. I had a few minor difficulties because of application incompatibilities with Mac OS 9. For example, I had to upgrade to Adobe Acrobat 4, and I had to apply a Mac OS 9 compatibility patch for Microsoft Office 98.

My one gripe here is the 64MB of RAM. Because Mac OS 9 consumes about half of that, you're going to have problems running more than one or two moderate-size applications. If you get a Cube, get more RAM.

As I mentioned, most Internet programs worked fine, being routed via Ethernet to a 3Com hub. The built-in modem is compatible with Boca Raton, Fla.-based Global Village Communication Inc.'s GlobalFax 2.6.9 fax software.

Expandability

Surprisingly, this sophisticated design doesn't sacrifice access to key internal components. You can add more memory or Apple's AirPort wireless network card and exchange the hard drive yourself. Just turn the Cube off, turn it over and press on a recessed slat that pops out and becomes a handle to lift the computer core out of the column, exposing the Dual Inline Memory Module sockets, AirPort slot and hard drive. Slide the core back into the tower and press the handle in until it clicks, and you're done.

The Cube lacks expansion slots, but most people will only add memory or replace a hard drive. Also, heat's a factor. The Cube is convection cooled, and more peripherals would mean more heat. If you need expansion boards, buy a G4 tower instead. A 400-MHz G4 tower, ironically, costs \$200 less than a baseline Cube.

The Cube served admirably as an industrial-strength computer, capably handling my workload. And it's quiet too: The only noise is a faint chuckle when accessing the hard drive; Apple has measured this level at 19 decibels, which is comparable to a very quiet living room. This makes it ideal for the home or small office where space and noise are important.

Let's face it: The Cube looks cool. Except for the LCD panel, the hardware isn't a great technical achievement, but its svelte size and sleek design make it look like a computer for the millennium. And this was achieved without compromising performance or the user's ability to upgrade the machine.

Clearly (no pun intended), Apple is also attacking the TV/computer media convergence from the computer side, because the Cube makes a superb entertainment system as well as a capable graphics computer, especially with its terrific screen.

Thompson is a training specialist at Metrowerks Inc. in Hollis, N.H.

Pros:

- Looks cool.
- Superb stereo sound system.Excellent LCD display.

Cons:

- Base 64MB isn't adequate. ■ DVD decoding done in software
- rather than hardware.

 It's pricey compared with the standard tower model



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Data visualization tools catch on for business analysis. By Steve Ulfelder

F YOU'RE A CLIENT of Deltek
Systems Inc. and your account
is in arrears, be aware that
when the company managers
and directors meet, your
name shows up on a computer screen in big red letters.

This sounds primitive, but like many businesses, Deltek, a McLean, Va.-based professional services automation company, is just scratching the surface when it comes to data visualization. The technology, rooted in scientific applications, is now being merged with statistical analysis software. The goal is to replace reports and tables with powerful, eye-catching images that convey important statistical data to even casual users.

Users of the technology rave about its ability to help businesspeople quickly grasp huge quantities of data, and experts say data visualization will quickly be merged into standard data analysis tools. But users complain that visualization products still have a ways to go where ease of use is concerned.

Until recently, most corporate information technology managers viewed data visualization technology as a toy for scientists or as a nice business tool that couldn't find mainstream traction. But experts say that's finally changing, for three reasons.

First, computer power has finally caught up with the technology. "A few years ago, you needed a \$20,000 Silicon Graphics workstation to use visualization," says Don Campbell, Ottawabased Cognos Inc.'s vice president of information delivery products. But that isn't the case anymore; new tools can run on desktops in a typical corporate environment, he says.

Second, the demand for business data is fearsome — and it's growing all the time. Even the most hard-core bean counters, born in Lotus 1-2-3 and raised on Excel, must work hard to pull the significant or potentially threatening numbers from spreadsheets. Data visualization makes those numbers impossible to miss and easy to grasp by everyone.

"These types of tools can help you more quickly adjust your mind and pinpoint information without having to interpret it," says Bob Moran, an analyst at Boston-based Aberdeen Group Inc. "It helps you see relationships by looking at a chart."

This is a vital point. Experts say data visualization software's ability to accentuate the relationships among data points is one of its major benefits. Moreover, e-commerce has put a premium on real-time data. In some sectors, it's critical to keep an eye on your own site traffic and your competitors' in order to see who's winning, what promotions are working, where the traffic's coming from and so on.

Data visualization makes this possible. Rather than having to wait for reports or compare sterile columns of numbers, it's now possible to use a browser interface to gaze in real time at your vital e-business numbers.

The final and perhaps most significant reason for data visualization's growth spurt is that vendors with deep roots in data analysis software—including Cognos, Naperville, Ill-based Visual Insights and SPSS Inc. in Chicago—are building the technology into their product lines.

Keith Gile, an analyst at Cambridge, Mass.-based Giga Information Group Inc., says that just as data mining has faded into the background as a standalone discipline but is more widely used than ever as the backbone of customer relationship management applications, data visualization will be folded in as the expected interface for statistical-analysis software.

From Analysis to Synthesis

Deltek uses Cognos' Visualizer 1.5 to synthesize analyses gleaned from other Cognos tools into an easy-to-understand presentation. "It lets us learn which projects are most profitable [and] which regions have the highest concentration of clients," says Shimi Minhas, Deltek's director of business intelligence. "You can immediately ID those hot spots, then drill down to the detail."

Deltek has used Visualizer for about six months, Minhas says. Because the company is a longtime user of Cognos' data analysis tools, Deltek didn't consider competing vendors' products. Regional and project managers liked stepping up from spreadsheets and reports because "they say they can make faster decisions," Minhas says.

Paid-up accounts appear in green, 30-day accounts in yellow and delinquent in red. "In looking at a Visualizer [presentation] of accounts receivable balances, we can quickly ID which clients are not up-to-date," Minhas says.

Although Deltek is happy with Visualizer, Minhas says, it can be difficult to understand for end users understand for end users understand for end users understand to other Cognos products. In addition to such Cognos data analysis products as PowerPlay and relational database management systems supported by the vendor's Impromptu, Visualizer supports flat files

and Excel files as data sources.

Visual Insights seems to be emulating Cognos' model. Founded in Bell Labs as a research project, Visual Insights started as a tools company but is fleshing out its product line, according to Michael Tatelman, vice president of marketing and business development. "We're now an analytic applications company using visualization as a core differentiator," he says.

Moran says he agrees that Visual Insights is "moving into analytic tools very quickly."

Houston-based energy company Enron Corp. found that risk management was a natural application for data visualization. "Risk management involves complex mathematical principals, and the results are not intuitive," says Rudi

ENVISION STATEMENT

DATA VISUALIZATION SOFTWARE lets users quickly pull raw data from spreadsheets and other sources and plot it in a 3-D graphical landscape for further analysis and interpretation. Here, a candy maker attacks a sudden inventory spike pinpointed in Cognos' Visualizer. The user has combined chewing gum inventory values (Z axis) from all plants and sorted the inventory data by month (X axis) and flavor (Y axis) to pinpoint the exact source of the problem. Aggregate dollar values of all gum by month appear in the shadow graph in the background. The user now suspects a seasonality factor with several flavors and begins a drilldown analysis in this area.

	A	8	
1	Date	Closing Value	
2	199801	15570013	
3	199802	16167914	
4	199803	37683979	
5	199804	77608803	
6	199805	2.58E+08	
7	199806	7.005+08	
8	199807	1.152409	Aggregat
9	199808	1.25E+09	dollar
10	199809	8.03E+08	values of all gum
11	199810	92906519	by month
12	199811	15080694	
13	199812	7540715.5	
14	199901	18879488	
15	199902	47964824	
16	199903	82925048	

	A	В	С	D		
1	Date	BubbleBurst G				
2	199801	64918.2	141753.26	791035.6	Y AXIS: Gum flavors	
3	199802	67539.6	141753.26	806856.8		
4	199803	168849	326064.6	1775457.6		
5	199804	422148.2	749994.44	3947168.8		
6	199805	1899692.6	3225012.8	13341906	ZAXIS: Gum inventory dollar values	
7	199806	8548642.4	8823005.4	30772026		
8	199807	47017533	37236027	49024840		
9	199808	35263176	28156389	55586646		
10	199809	14105291	11629454	35586710		
11	199810	564217.8	832129.7	4620632.4		
12	199811	112874.4	166471.8	924224		
13	198812	56437.2	83235 9	462146		
14	199901	129836.4	241452.9	1184616.8	X AXIS: Months	
15	199902	298634	700282.2	3059400.8		
16	199903	421094.5	1163743.4	5679782.4		

Zipter, Enron's director of market risk management. Enron develops energy and bandwidth portfolios, which it then trades like commodities. "We like to analyze and decompose risk across the portfolios," Zipter says.

Zipter's department started using Visual Insights' Advizor/2000 late last year. He says it "results in a keener insight of risk" because it "allows you to see where risk is coming from."
Recently, the risk management department was certain that the risk in a certain portfolio was coming from one source. But, he says, "by putting traders' portfolios in a 3-D visualization, we could see right away" that they had misidentified the problem area.

Advizor/2000 accepts standard Ex-

cel tables as input. It also accepts online analytical processing "cubes" structures that store multidimensional information — that are created in Microsoft Corp.'s SQL Server 7.

Zipter does have a few suggestions for improvements to Advizor/2000. He says the flexibility built into the product brings an almost overwhelming number of possibilities when Enron develops applications. "And there's not a lot of documentation," he adds, "so it's learn as you go."

A More Granular Approach

Another data analysis heavyweight, SPSS, offers nVizn, a Java-based developer's tool kit that lets businesses create their own visualization applications.

The advantage of the development-tool approach is its flexibility. SPS's Dan Rope, nVizn's chief architect, mentions its "granularity" when discussing the absolute control developers can hold over their presentations. "The developer then uses his knowledge of the [specific business] domain" to make data do exactly what he wants it to do, Rope says.

Waratah Corp., a Durham, N.C.based firm that provides software development and data mining services to the health care industry, chose nVizn when Health Hero Network Inc. in Mountain View, Calif., asked it to create an information visualization component for Health Hero's Web-based patient care management system.

According to Michael O'Connell, Waratah's president, patients at home answer a series of questions about their health on a daily basis. That data is then used to build a 3-D visual representation that makes it easy for health care professionals to monitor patients' health on an ongoing basis.

The SPSS visualization is superior to simple charts, O'Connell says, because "you're able to see trends in information across time with metadata — that's much more powerful." Danger signals such as weight fluctuations raise a red flag, triggering an intervention, he explains.

The trade-off for such granular control may be added complexity. SPSS officials say it typically requires a team of three to create a custom visualization application with nVizn:

a "domain expert" (in the health care example, this might be a doctor), a developer and an analytics expert.

So while Cognos and Visual Insights are attempting to build fronto-back data analysis suites that feature a visualization interface, SPSS is selling a do-it-yourself kit that requires a more significant development effort up front but can potentially pay off with supercustomized presentations that better fit an organization's data and business.

While the business case for visualization tools is powerful, vendors have their work cut out for them. Their push today is to overcome visualization's reputation as a high-maintenance tool for scientists and to get software into the hands of subject-matter experts — the people who can best use them. Tatelman says he believes the trickle-down of visualization software will mimic that of desktop publishing tools.

Judging from interviews with users, however, vendors must first make data visualization software more intuitive and easier to use. Right now, users appear overwhelmed by visualization's unlimited possibilities. But they always get through this stage with new technologies, and what was initially intimidating quickly becomes well understood.

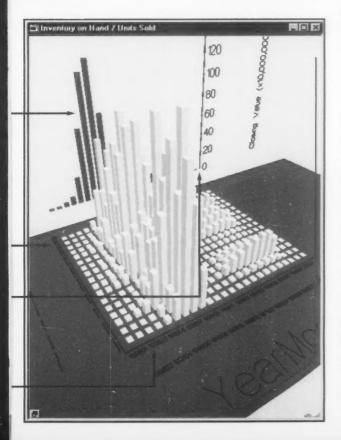
"That's a natural part of [any new technology's] evolution," Gile says.
"Business intelligence software has always been focused at the power user. Everybody's got to see a real neat visualization app before it catches on."

It's critical that products become easier to use and to populate with data. One major problem for IT is that data visualization tools have always been parasitic by nature — that is, they've taken data from existing programs such as spreadsheets and prettied it up.

End users saw the results and often demanded visualization tools of their own. But where was the data going to come from? That was IT's problem. Now the melding of analysis tools and visualization appears to be addressing that issue as well.

Ulfelder is a freelance writer in Southboro, Mass.

mInis



Visualization Tools

VISUALIZER 1.5 Cognos Inc.

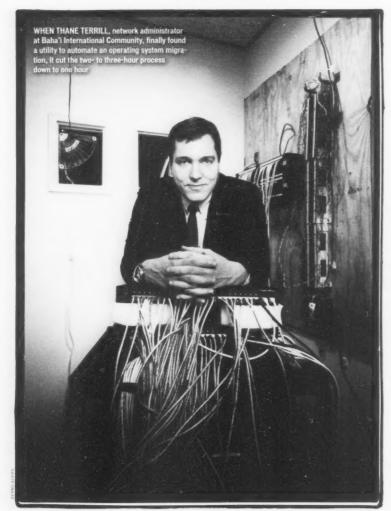
Ottawa \$795 per client; site license available www.cognos.com

ADVIZOR/2000

Visual Insights Naperville, Ill. \$295 per user www.visualinsights.com

nVIZN

SPSS Inc. Chicago \$10,000 per developer seat plus deployment license; price varies with deployment size www.spss.com



The problem: When an enterprise replaces a user's computer or upgrades to a different operating system such as Windows 2000, it's likely to lose a lot of productivity while that user attempts to re-create on the new system — whether on his own or with help desk support — his previous working environment of desktop settings, data files, utilities and personalized settings. By David Essex

OMPUTERS DON'T LAST FOREVER. Many enterprises routinely upgrade or replace PCs every two to three years, which means information technology staffs must handle hundreds or thousands of replacements annually. Each replacement involves a certain amount of work for IT, as well as some disruption for users. If you're also upgrading to a new operating system such as Windows 2000, along with newer versions of core applications, then the problems can increase dramatically. IT needs help, and a new class of software tools has emerged to supply it.

If you've ever set up a new PC, you know how tedious a task it can be. You have to install applications that aren't preloaded and then alter their factory-default configurations to match your working environment. You have to back up data, of course, and also desktop settings, Internet favorites or bookmarks, e-mail configurations, dial-up and remote access configurations and more.

This data is located in different places on a PC — some inside program files, some in configuration files and some

Migration Tools Ease New OS Blues



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SPECTRA LOGIC

Migration Tools Ease New OS Blues

in the Windows registry — and there's no simple way of making sure you have everything you need or want. If you're also upgrading to a significantly different operating system (say, Windows 9x to Windows NT or 2000) or to newer applications (such as from Office 97 to Office 2000), then the problems are compounded.

The IT department may be charged with setting up a user's machine, but if all it does is install a standard disk image and configure the network settings and e-mail connections, the user may have a lot of work ahead of him until the new system functions as the old one did. [Note: As Computerworld's reviews editor, I deal with 20 to 30 new systems, mainly laptops, each year. I'm painfully familiar with the work needed to re-establish my own working environment on a new machine.— Russell Kayl

This problem isn't new, but it's gotten worse as software has become more complex. A major factor is the oft-delayed and much feared migration to Microsoft Corp.'s Windows 2000 Professional desktop operating system. A new breed of enterprise utilities, called PC migration tools, seeks to automate the manual labor of getting users onto new PCs without having to tediously reconstruct the passwords, user identities, screen settings, IP addresses and documents. Researchers at Gartner Group Inc. in Stamford, Conn., and International Data Corp. (IDC) in Framingham, Mass., say they agree that a smooth migration can knock \$200 to \$300 off a PC's total cost of ownership.

PC migration isn't just a matter of transplanting PC "personalities." It also requires a quick way to get new operating systems and applications onto systems, or applications onto new hardware. Disk-mirroring or -imaging tools — Cupertino, Calif.-based

"They sounded like I was asking about the man on the moon."

That's the help that Thane Terrill (left), network administrator at the Baha'i International Community, says he used to get from utility vendors when he asked for help in migrating user settings. So he'd muddle through with Windows Notepad, a printed checklist and a few specialized utilities. "It was really a hit-or-miss thing."

Symantec Corp.'s Ghost is the de facto standard — are often used to lay down a standard set of applications before the user settings are brought over. But because of compatibility problems, migration tools only support a few mainstream office programs, handling less-popular applications through checklists and scripting languages that can be harder to use.

Computerworld asked users of three well-known migration packages to describe their experiences and informally rate the products for ease of setup and use, reliability, feature sets and performance.

Avoiding a Software Meltdown

Michael Phillips, supervisor of the computer support team at the Diablo Canyon Nuclear Power Plant in San Luis Obispo, Calif., recalls the way his group used to handle migrations. With the DOS XCOPY command, special scripts initiated backups to network drives. Shrink-wrapped backup software didn't help much because it didn't automate restoration. Each system took up to six hours of a technician's time.

Now, to move about 1,000 of the plant's 1,500 work-stations to Windows 2000 and Office 2000, Phillips has help from Altiris eXpress, a software bundle from Altiris Inc. in Lindon, Utah. The bundle includes PC Transplant Pro personality software, a mirroring and configuration tool called RapiDeploy, and RapidInstall, which simplifies upgrades by recording changes on a single machine and then creating special RapidInstall Packages (RIP) that users execute on their own systems.

Phillips says he picked eXpress because it came with the other utilities needed to perform a full migration, rather than requiring third-party mirroring tools. He says he also liked eXpress' ability to randomly reset security identities on cloned NT systems.

So far, Phillips' group has migrated 300 systems, each in a little more than an hour. He says he chose not to use the package's discovery features, preferring to use an existing process of simple utilities and a manual system in which users are responsible for reporting their systems' contents. "We didn't feel [eXpress] would give us all the information that we need," Phillips says.

Settings in Microsoft Outlook had to be changed manually, and there were problems in moving from Microsoft Exchange to Outlook: Calendars were improperly merged, and Phillips says he isn't sure which product is to blame. EXpress also doesn't work with the plant's Unix-based server boot-up utility, but Altiris has promised to fix that in a future release.

Phillips says eXpress' ease of setup and use are good. "It seems like it's been pretty easy to train our people on," he says. Feature richness and reliability are also good, he says, but he rates performance a bit higher, thanks to the fast execution of RIPs. Though Phillips gives eXpress generally good marks, he remains somewhat guarded in his evaluation. "I'd say the verdict is still out on the product," he says.

For Michael Santiago, migration tools don't just reduce labor; they also help smooth out and simplify the entire process. As a network engineer at the Army Space Program Office outside Fort Belvoir in Alexandria, Va., Santiago is one of two people who must move a completely mobile, 120-user workforce from older Gateway Inc. notebooks with Windows 95 to new Pentium III Gateway 2550s with Windows 2000. Santiago started using Desktop DNA from Miramar Systems Inc. in Santa Barbara, Calif., last month, migrating users at a rate of six per week.

The old method depended on kludgy backups and could take several hours or days. Further productive

Continued on page 101



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TECHNOLOGYFIELD REPORT

Migration Tools Ease New OS Blues

Continued from page 98

time was lost coordinating the work with users' availability to bring systems in for servicing. "We needed to make sure when they got their new laptops it wasn't much of a change for them," Santiago says.

Now, everything runs more tightly. "It'll take about an hour to transfer data to the server and another hour or less to download it back to the new box," he says. "The only monitoring I do is I come back once in a while to see what stages it's in."

Santiago says he considered using Altiris eXpress but decided it was less intuitive than Desktop DNA. "I don't have a whole lot of time," he says. "I was looking for something that was quick and easy and would do what I needed, and this seemed to fit the bill." He says he likes that Desktop DNA lets him run backup and mirroring from the within the same user interface.

Santiago rates Desktop DNA as excellent in ease of use, setup, reliability and performance but rates the features as only "good" because there are too many of them to easily manage. "You'd like to get rid of some screens," he says. "It's not flawless."

He also encountered problems with settings in Microsoft Outlook and Outlook Express. A Desktop DNA screen that lets administrators migrate programs along with user settings could allow someone to accidentally replace newer applications on the target system. "If you're not careful, you'll overwrite your Office 2000 [Dynamic Link Libraries] with Office 97's," Santiago says.

Santiago acknowledges that such a move would be user error but faults the designers for making the mistake more likely to occur. "What they should do in not have it autoselected at the beginning." he says.

On balance, Santiago says, he likes Desktop DNA and is considering using it for a migration from NT to Windows 2000 that's planned for another user group.

Peaceful Transitions

Thane Terrill says he has long wanted a utility to automate migration. As network administrator at the Baha'i International Community in New York, an organization that represents the Baha'i Faith, Terrill single-handedly maintains about 20 Windows NT 4 systems for Baha'i staffers, many of whom sit on United Nations committees. An additional 20 Windows NT machines are used by guests and volunteers.

Terrill called utility vendors whose products he was already using, such as Symantec and Power-Quest Corp. in Orem, Utah, asking for migration tools. "They sounded like I was asking about the man on the moon," Terrill says. So he muddled through with Windows Notepad, a printed checklist and a few specialized utilities, including one that carried over bookmarks from Web browsers. He exported Microsoft Outlook files to network drives. "It was really a hit-or-miss thing," he recalls.

Now, Terrill is using Beaverton, Ore.-based Tranxition Corp.'s Personality Transport Professional I.0 (PT Pro) to move approximately 20 users from Microsoft Office 97 to Office 2000. He also uses PowerQuest's DriveImage Pro to put a standard application imprint on the PCs, most of which come from Dell Computer Corp.

The process has been cut from two to three hours

to one hour, though Terrill still must sit at each machine to run the software and choose items on checklists that determine which data gets temporarily saved on the network. So far, installing the software and extracting settings and applications, moving them to a network drive and then reinserting them has been smooth and painless. Terrill says PT Pro moves about 90% of what he needs, though it has trouble moving Internet Message Access Protocol (IMAP) settings from Outlook 98. He had upgraded from Outlook 97 to get the IMAP features.

Terrill adds that he would like to have the option of moving cookies, a feature Tranxition left out of Version 1.0 for security reasons. He says more granularity in the checklist would allow the exclusion of sent e-mail from migrations. All three features are promised in the next version, which started beta testing in late summer. Terrill rates the performance, reliability and setup of PT Pro as excellent and the breadth and depth of features as good, since he had to ask for features to be added in the next version. A Windows 2000 upgrade is inevitable but not imminent; Terrill says he sees few compelling benefits in the newer operating system.

By one estimate, PT Pro could save the U.S. Internal Revenue Service as much as \$29 million in that agency's effort to standardize 130,000 PCs on Windows NT 4 and Office 2000 in 54 locations, in preparation for a later move to Windows 2000. "What we're doing is ensuring that our environment is standardized," says Tom Hoffmann, director of the IRS's end-user computing support division in Dallas. "You need to do that to be able to go to Windows 2000."

According to Hoffmann, some IRS offices had been writing scripts to handle migrations to the 75,000 new systems installed last year as part of a modernization contract with Computer Sciences Corp. in El Segundo, Calif. The process previously took more than three hours per machine, but it could fall to 15 to 20 minutes for new systems that already have the applications mirrored on them. The IRS primarily uses Symantec's Ghost for this task, he says.

Though most key tax-related programs run on mainframes, users' standard PC applications are also important. Besides NT 4 and Office 2000, the IRS uses Microsoft Internet Explorer, Adobe Acrobat Reader and Attachmate Corp.'s InfoConnect communications software for mainframe access. Hoffmann says it's important to retain certain features such as Web bookmarks and large-type screen fonts for the vision-impaired.

The IRS expects to start using PT Pro next month after testing "to make sure it works as the shrink-wrap says it does," Hoffmann says. "I didn't get the impression that there was anything [we] wanted to do that they couldn't do. The technical people that we have involved are extremely critical. There was not one negative comment about the tool." He says he hopes to finish the migration by the end of June next year.

"We believe this will make us more efficient" by avoiding employee downtime, Hoffmann says. "Before, the user had to start [configuration] all over again."

These aren't the only products available to assist in system migration, but they seem to address more of the many tasks involved than other utilities or tool suites do. It's hard to compare one directly with another because each takes a slightly different approach to what settings it transfers and how it operates. An IT department's choice may well depend on how well a specific tool meshes with the enterprise's environment and way of working.

Desktop
DNA 2.0

Miramar Systems Inc.

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www.miramarsystems.com

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Essex is a freelance writer in Antrim, N.H.

Symmetrical Multiprocessing

BY JAN MATLIS

YMMETRICAL multiprocessing (SMP), a type of computing that uses more than a single processor, rests at one end of a continuum running from the tonguetwister Cache-Coherent Non-Uniform Memory Architecture (ccNUMA) to the less tightly coupled massively parallel processor systems and on to distributed systems such as Beowulfs, which are clusters of commodity, off-the-shelf PCs that are interconnected with a technology like Ethernet and run programs written for parallel processing.

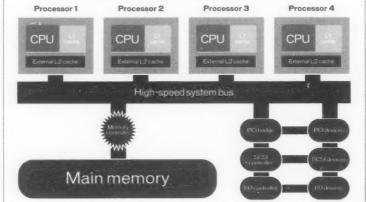
Ironically, both the strength (speed) and weakness (lack of scalability) of SMP come from its most salient feature: shared memory. On the plus side, there's no need for message passing, and there are rarely unequal memory fetches, allowing SMP systems to communicate and synchronize more quickly than other parallel-processing systems. Note the qualifier rarely; there is one resource that isn't shared. In most SMP systems, each processor has its own cache memory. This more expensive static RAM is required because main dynamic RAM access is too slow to keep up with the speed of the processors.

This, however, leads to a cache coherency problem when an SMP processor needs to access an address that may already be stored in another processor's cache. The problem is solved in hardware. The desired address comes from the other processor's cache, rather than from main memory, and the value in the originating cache is invalidated.

Although this solution is fast, it still generates more overhead than that of a singleprocessor system, which is one DEFINITION

Symmetrical multiprocessing (SMP) is a parallel computer architecture in which multiple processors run a single copy of the operating system and share the memory and other resources of one computer. All the processors have equal access to memory, I/O and external interrupts.

Four-Processor SMP Computer System



reason the throughput of SMP | tions that require a high degree systems isn't proportionally greater than that of singleprocessor systems. That is, the throughput of two processors is less than twice the throughput of a single processor, and the throughput of four processors is less than twice that of two processors.

For a limited number of processors, SMP still beats out the overhead required by other parallel architectures, making it the front-runner for applicaof cooperation.

Shared memory also has an impact on coding. While there is no need to pass data among processors, it is necessary to avoid race conditions, in which the last processor to access and write out a data value overwrites the work of the other processors. There is a limit to how many SMP processors may share the operating system and the resources of a computer before memory and bus contention impose a law of diminishing returns: The upper bound for ordinary desktop SMP systems appears to be about eight processors. High-end SMP systems and modified SMP systems like ccNUMA are more scalable.

Essentially, ccNUMA systems are SMP systems that are broken into memory domains, with some memory less local than for pure SMP. For applications that aren't tightly coupled and naturally fall into

domains, this may be perfect. Higher-end ccNUMA systems have been made to scale to as many as 64 nodes, with 128 processors. However, SMP systems aren't fault tolerant. If one processor goes down, cache coherency for the operating system and the user application are no longer guaranteed. It's likely that system and user variables are left in an unresolved state. There may be pointers with values that have no meaning. Eventually, one of the remaining nodes is likely to access something that will cause it to crash.

A combination of an operating system, a motherboard and processors must be configured to run SMP. In software, SMP is supported by most varieties of Unix, Linux 2.0 and above, Mac OS 9, OS/2 Warp Server, Windows NT and Windows 2000. It isn't supported by MS-DOS, Windows 95 or Windows 98. Threaded applications that can take advantage of SMP include Microsoft Corp.'s BackOffice Suite, Lotus Notes and SQL database managers from Oracle Corp., Sybase Inc. and Informix Corp.

On the hardware side, SMP can be implemented in Ultra-SPARC, SPARCserver, Alpha and PowerPC architectures. and also by all Intel chips, including 486s and above.

Because Intel owns the Advanced Programmable Interrupt Controller (APIC) standard that's used for SMP, other CPU vendors, including Taipei, Taiwan-based Via Technologies Inc. and Sunnyvale, Calif.-based Advanced Micro Devices Inc., can't use it. Instead, they support the nonproprietary OpenPIC standard for Via's Cyrix 6x86 and AMD's K6 processors.

Matlis is a freelance writer in Newton, Mass.

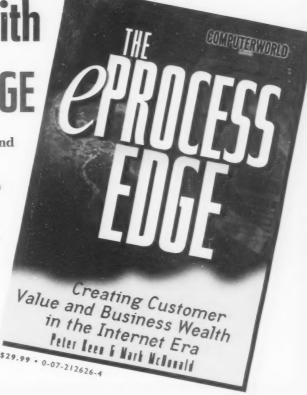
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The Assembly Line Gets a Web Interface

Start-up Datasweep makes manufacturing info updates available on the Internet

BY AMY HELEN JOHNSON

THE U.S. Food and Drug Administration likes to know what parts and processes are used to assemble medical equipment. This lays a big recordkeeping burden on Intuitive Surgical Inc., a Mountain View, Calif.-based manufacturer of surgical robots.

The company collects a lot of information during assembly, says Don Chamberlain, a senior analyst. But, he adds, the company was writing it on paper. Faced with the need to make that information more accessible, Intuitive Surgical turned to Datasweep Inc., a vendor of manufacturing execution systems (MES).

Datasweep's sole product, Datasweep Advantage, is a Web-enabled application suite written in Java that puts PCs on the manufacturing line, where assembly operators type or swipe bar codes to enter the details of components used in goods such as medical instruments and computers.

PC clients run Windows NT Workstation or Windows 2000 Professional, while the back end requires Windows NT or 2000 Server with a Microsoft SQL Server or an Oracle8i database for data storage. Advantage also accepts data transfers from automated machinery such as robot assemblers and testers and stores work instructions, test and quality records, and usage history.

The Advantage

Advantage is similar to existing MESs, says Kenneth Brant, an analyst at Stamford, Conn.based Gartner Group Inc. But "their ability to provide a manufacturing genealogy of how products are assembled in combination with Internetcentricity and rapid projection implementation is what makes them an interesting company,"

Datasweep says it can auto-

mate an assembly line in three months. "That's a big change from the traditional MES project implementation [of 24 months]," Brant says. The other big difference between Datasweep and its competitors, he says, is its ability to feed near-real-time assemblyline information to a Web site so that customers can track the

That capability sold Allen Lee, president of ACMA Computers Inc. in Fremont, Calif., on Advantage. His company assembles between 6,000 and 9,000 CPUs per month, all made to order. Tracking an order was easy until a unit was being built. Then it "kind of went into a black hole," Lee says. Sales representatives who needed to answer a customer's

questions on order status ended up talking to the people on the shop floor, interfering with

KEVIN CHAO, Steve Volm, Vladimir Preysman, Don Frede and Matt Holleran (from left) are Datasweep corporate officers

Datasweep Inc.

Location: 55 Almaden Boulevard. Suite 600, San Jose, Calif. 95113

Telephone: (408) 350-7300

Web: www.datasweep.com

Niche: Manufacturing data collection and analysis

Why it's worth watching: Its Web-based portal gives external access to near-real-time order status and tracks custom orders.

Company officers:

- · Vladimir Preysman, co-founder, president and CEO
- · Kevin Chao, co-founder and vice president of engineering

- 1998: Founded
- · Sept. 1999: First product · Oct. 1999: second round of
- venture funding · Dec. 1999: Version 2.0 released

Employees: 85; 400% annual growth projected

Burn money: \$14 million from Accel Partners and Mohr. **Davidow Ventures**

Products/pricing:

Datasweep Advantage 2.0; installations start at around \$150,000 without services; about \$300,000 with services

Customers: Flextronics International Ltd., Intuitive Surgical Inc., Everdream Corp., KLA-Tencor Corp., Netro Corp., Acma Computers Inc. and Harmonic Inc.

Partners: Apile Software Corp. webPlan Inc., Microsoft Corp., Pittiglio Rabin Todd & McGrath LLC, Strategic Information Group Inc. and Oracle Corp.

Red flags for IT:

- Established players in manufacturing execution systems are also adding Web access.
- · Most clients today are in hightech manufacturing.

production and cutting the line's efficiency, he says.

Now, salespeople can find an answer through Datasweep 90% of the time, says Lee, Six months after installing Advantage in March last year, the production average per person rose from 85 to 111 units, he says. But he doesn't credit Datasweep with all of that improvement; the project also included simplifying internal processes and training, he says.

Moreover, the internal quality assurance reject rate has dropped to 1.02% from a high of 19%, he says, due to his staff's new ability to quickly analyze Advantage's databases for production problems.

Lee and Chamberlain have earmarked areas for improvement, such as the user interface and the ability to store more information about the whole product life cycle, from incoming materials inspection to warranty claims.

The Sweet Spot

Datasweep's sweet spot is in assembly lines that use discrete components things like chips instead of liquids — that are hooked together in a certain sequence. Build-to-order is a key segment, says CEO Vladimir Preysman, because Advantage can provide the benefit of Web-delivered order status. First-quarter sales in

COMPUTERMON MILLIAN S this fiscal year are up, reports Datasweep, which emerging declined to provide revenue numbers.

Companies Preysman accompanies edges that so far the been mostly in "green-

field" sites that don't have an existing MES installation and that the most common industry is high-tech equipment. "We replace the paper," he says, referring to a sheet called the "traveler," upon which assembly-line workers write down component numbers and the like.

Datasweep needs to target customers with existing MES setups, Preysman says. That will put it up against competitors such as USData Corp. in Richardson, Texas, says Brant, which are upgrading their products to include features like Web site order-status displays, Datasweep's current competitive advantage.

Johnson is a Computerworld contributor in Seattle.

the buzz STATE OF THE MARKET

One Step Ahead

Tom Cook, a senior analyst at Bostonbased AMR Research Inc., says Datasweep Advantage has a clearly differentiated value proposition, offering fast implementation, a window to the shop floor via the Web, trends analysis using the bundled databases and remote management Traditional manufacturing execution systems (MES) aren't as well-endowed with features like nearreal-time reporting and Web interfaces,

But that's changing: "Everybody else will have Datasweep's functionality in their sights, and they're going to build it up as quickly as possible," Cook says.

That means Datasweep will have to keep a close eye on established com-

One quality that will continue to give Datasweep an edge, says Cook, is that the software was written recently, using the latest Internet technologies, and was built from the ground up to be a Webenabled application. Its competitors, on the other hand, have software that's decades old in some cases, and they're having to tack on new features.

Camstar Systems Inc.

Campbell, Calif.

www.camstar.com

Cook says Camstar has a large set of clients in the electronics manufacturing industry, which overlaps Datasweep's high-tech customer base. Mesa is the company's older MES system, while In-Site is a newer, Windows NT-based, open-architecture application.

USData Corp.

Richardson, Texas www.usdata.com

Cook says USData's Xfactory takes a tool kit approach that lets users build what's needed for their assembly lines. Its focus on the shop floor has made it light on features such as canned reports. says Cook. The latest release has some capabilities for viewing information over the Web. An add-on called Connector links Xfactory data to a company's backend business systems.

GenRad Inc.

Westford, Mass www.genrad.com

Genrad's Shop Floor Data Manager is often found in PC board assembly shops, says Cook. It integrates with back-end enterprise resource planning systems but hasn't made significant advances with Internet publishing.

- Amy Helen Johnson

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Hiring the Nontechie

Smart employers know they can never find enough skilled IT workers in the job market, so they're creating their own – from nontraditional backgrounds, both inside and outside the company. By Melanie Menagh

still clamoring to find enough workers, smart companies have made great leaps in recruiting information technology staff from nontraditional areas. This can mean bringing a recently graduated music major on board or finding a customer service person in-house who demonstrates IT aptitude.

Some employers have found ways to ferret out potential IT professionals. We asked several IT managers how they find and train the right people and what are the benefits of having nontechies in the mix.

At UnitedHealth Technologies in Minneapolis, there are several paths in technology that non-IT employees can choose. UnitedHealth offers tuition reimbursement for college classes and degrees, so if someone wants to become a programmer, they can educate themselves to fill that roll. The company also has an in-house "Learning Institute."

"We need people who can do the business-analysis testing and implementing for rapid deployment of IT solutions," says Darcie Corbin, vice president of business systems planning, "For half their day, they take courses in business analysis and testing and project management."

Many companies do this sort of career transitioning on an informal basis. Greensboro, N.C.-based Guilford Mills Inc., a fabrics manufacturer, had difficulty recruiting employees in rural Cobleskill, N.Y. "We were unable to find qualified IT people," says Bryan Puffer, an information systems technician, "so we looked elsewhere" — within the company.

"Somebody here who enjoyed playing around with his home computer expressed an interest," in technology Puffer says. Puffer and his boss provided much of the basic training and mentoring the employee needed. When more advanced skills were required, his boss provided formal Novell training.

In a tight job market, Rob Figliulo, chairman and CEO of SPR Inc., an IT services company in Oak Brook, Ill., looks among non-computer-science college graduates.

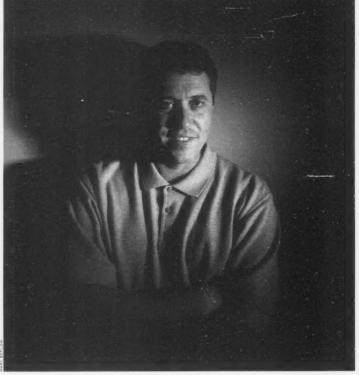
"Give me the right person, and I'll give them skills. We're looking at whether you have the right attitude and disposition for the job rather than what skill set do you have," Figliulo says.

Training Fills Gaps

SPR employs graduates with majors ranging from math to music. Non-IT hires are trained on BroadVision, Java and HTML. "We give them formal training, then we assign them a mentor, put them on project teams with people skilled on those tool sets and they do very well," he says.

Of course, hiring nontechnologists for IT roles requires some give-and-take. "Managers are more flexible with hiring requirements, with the idea of supplementing training," says Linda Fagare, a technical recruiter at The Boeing Co. in the Seattle area.

Boeing has a variety of train-



ing options. "We have a very extensive program of off-hours classes in C++, software and programming. We also have the 'Learning Together' program, where Boeing will pay you to take accredited college or university classes or get another degree," Fagare says.

Specialized skills are particularly important. "We need people with domain knowledge in command/control, intelligence, surveillance, guidance and navigation. We'll get people who don't have IT experience but do [have experience] in these areas, and we will train them on IT," says Fagare. "It's usually much easier to teach the people the technology rather than the domain area of our business."

Managers need to look beyond traditional IT talent. Judith Volente, a consultant to
the IT division of CGU Corp.,
an insurance company in Foxboro, Mass., suggests, "You
need someone who has an
innate curiosity and flexibility
— someone who can handle
multiple tasks and look at the

bigger picture. Project management is the most important; conflict management is next."

Non-IT employees with these special qualities can opt for the "Choose IT" training program at Sprint PCS Group in Kansas City, Mo. "You have to go through an application process," says Cleone Davis, vice president of application development and information resource management.

"We determine which specific skill sets we're short on, such as Web development. Then people are interviewed, and we do aptitude testing for that kind of work," says Davis.

Candidates who are selected go through formal training as well as a mentored internship with on-the-job training for six months to a year.

"If you give this person the chance to significantly change their career and earnings potential, that will make them feel good about Sprint and want to stay with Sprint," says Davis. •

Menagh is a freelance writer in Maple Corner, Vt.

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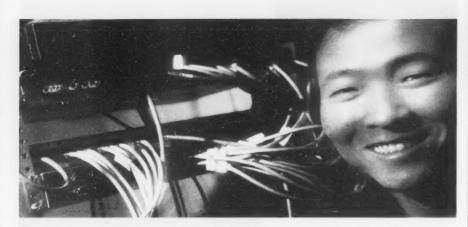




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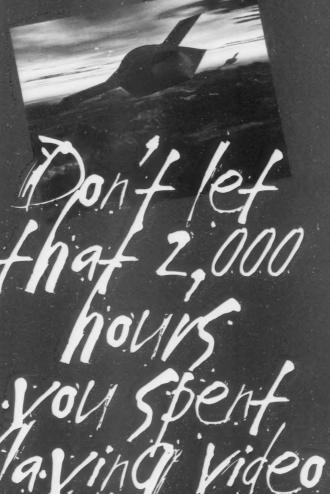
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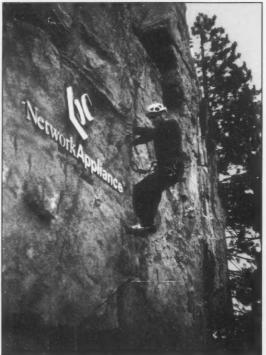
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You will be responsible for planning, designing, and developing handware, as well as planning schedulic design, integration, and test activities. Will develop requirement documents and specifications while establishing parameters for appropriate handware accumentation, instruction minister, test procedures, and related materials. Will act as a falsion between software and handware procedures, and related materials. Will act as a falsion between software and handware procedures, and related materials. Will act as a falsion between software and handware resolvent activities, with instructing to design and develop handware for specific customer-applications. Will participate in proposal preparation for new or customer-specific products and recommend improvements in new and existing products. Will also be responsible for preparaming departmental budgets and mispower requirements. Will act as a censultant to customers regarding technical mattern. To qualify, you should have 50 or more people in a handware design and LSI design eminorment. Experience managing observations as well as telecommuters and remote sideonthractors. BO 8000, P. & L. and active design & architectural apperciace. Telecommunications industry experience.

Software Engineering Manager

You will be responsible for planning and manuaging all software development. Will develop requirement documents and specifications within establishing parameters for appropriate hardware documentation, instruction manuals, test procedures, and related materials Will act as a lases between software and tundavire personnel inside and outside the company, manuage software subcontractions, which marketing to design and develop software for specific customer applications. Will participate in proposal preparation for more or customers specific products and recommend improvements in new and existing products. Will also be responsible for preparing departmental budgets and manpower requirements. Will act as a consultant to customers regarding technical matters. To qualify, you should have 50 or nero years of resperance manuaging subcontractors as well as telecommaters and remote subcontractors. ISO 9000, P. & L. and active design & architectural experience. Telecommunications industry experience.

Networking Software Engineers

You will design and develop software for belocommunications and networking products. This includes retworking protocols laymend on a real time eysplom with many asynchronious tasks communicating by message upraise or semaphores. To qualify, you must be capable of programming in G and C++ and of understanding object-oriented programming. Experience with SNMP and management functions including alarms and provisioning is also desirable. Familiarity with standards, including ITU-T, ATM Forum, and Frame Relax Forum to largify desirable.

LSI Design Engineer

You will be reaponable for performing and coordinating all activities required to complete. ASIC designs and implementation. Performs engineering, development, and design activities. Work includes complex design, modification, simulation, and debugging of chips. Biands and systems. It also involves evaluation, configuration and operation of LSI development tools. Or qualify, you should have a BSEE or equivalent with at least 5 years repersone in LSI and PSPSA design upon a VHD. or Verviou.

Product Manager - Strategic Relationships

You will be responsible for identifying, recruting, and managing relationships with other companies to meet Manirer Networks' business goals. To qualify, you should have technical marketing or sales experience in feworking or teles communications. Your experience should include developing relationships in at least one of the following anassi interoperability partnerships, joint development agreements, standard setting agreements, or analyzed setting agreements, or analyzed setting.

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NETWORKING HARDWARE DESIGN ENGINEER

Define, design, develop, and lest new layer 2 switches and layer 3 routing/switches. Must have strong digital design skills, good team and communication skills, and desiry inflation to succeed in the fast paced, fast growth field of networking. Requires a BSEE/CE or equinolen; 3 + years' exp. in Digital design, and knowledge of HVW development cycle, tools, and processes.

MSEE and knowledge of filternat IAN networks & design of hubsy-winthers deserved. — 689972/89996

HARDWARE ENGINEER-OEM

Create product Specs, hardware designs, and manage schedules.

Must have a desire to work with outsource vendors and knowledge
of ASIC, PC board design, routing switches and protocols,
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Work w/ASIC & HW teams to define operation/coupling of HW-SW. Adapt Y&Works based kernel to new HW architects, providing layer of HW indap, services to higher layer protocol implementations. DMA & Network drivers, address table monagement, chassa/port management, filters, runks/logical port management, system services VAMOS, RIP CSPF, VAMP, GVRP, DVRP, etc. Requires a BSCS/CE or equivalent. – 669974/687453

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Prod's operate w/in HP TopTools, HP OpenView platforms. Design, schedule, develop, document, and test new network management features in current/fulture products. Work w/embedded SV team to define interactions between embedded software feature set and the network management solutions. Work w/Martistriag to develop product documentation and train staff. Requires a SECS/CE or equivalent and Innovikedge of OO design, C, C++, and Janu. – 678372.

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Contribute to the verification of HP products during the design life cycle. Bet tool development, test automation /optimization, and implement lest Info Management System. Must have had appoure to HPVEE, C, C++, Visual C, Crystal Reports, Programming. Network (Societs, WinSodd, SWP4+) LIMSK, Tixus, NT, FrontFlage, Windows, real-time, and thread. Requires a 95C/SC and 3+ years e.g. or equivalent and lanowledge of C, C++, Oracle, & UNIX. - 6897556

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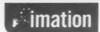
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The Personal Manager Offshore Digital Services, Inc. 14798 Wicks Boulevard San Leandro, CA 94577 Fax: 510-483-1819 Ernail: personnel@odsi.com

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Job location: Houston, TX. Dutes: Analyze, develop & implement practical multi-lier web & database applications utilizing advanced development tools & amethodologies including; JAVA, VB, SQL SEPVER, C/C++, IS& COM/DCOM. Assist in the development of specifications & products for use as possible elements in an overall application including technical viability & the products future direction. Assist in the testing, documenting & integration of application including technical viability & the products future direction. Assist in the testing, documenting & integration of application including technical viability & the products future direction. Assist in the testing, documenting & integration of application elements. Requires M.S. in Elec. Eng., Comp. Info. Sci. or related field plus 2 yre sep in the job direction. Assist field plus 2 yre sep in the job direction. Assist field plus 2 yre sep in the job direction. Assist yre must include 2 yrs. exp. single. Ym. sep in the job direction. Assist yr must include 2 yrs. exp. single. GoLOMLOCOM. Send resume to Ter Allen, marchFIRST, Inc., 311 S. Wakeer Pres. Sum-assor.

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Senior Systems Analyst (Buffalo Grove, IL). Set up and configure servers, workstations and centro systems rularlyst (blanta carriers) and party the servers, workstallones and peripheral equipment including printers, scanners and cameras, install and configure software applications including MS Office applications and with edocumentation. Design and maintain company intranet. Provide troubleshooting and support for system hardware and support for system hardware and software training to new employees. Requirements: BS in Computer Science or Engineering. Must have 1 year in job offered or at Lat Assistant invoking Must have working knowledge of Windows NT, Mac and PC troubleshooting. MS Office applications and MS publishers. of Windows NT, Mac and PC troubleshooting, MS Office applications and MS publisher. Must have knowledge of database/data management techniques either via education of experience 40 hourselve, MF-F, resume in Duplicate to Attro-Vit. 2410-N. Illinois Dept. of Employment Security, Foreign Labor Certification Unit? North, 401 South State Street, Chicago, IL 60605.

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Strategy Shift Has Next Level in Limbo

VDSL deployment may not be as fast as hoped

BY PIMM FOX

HE FUTURE is now, but is anyone really interested in paying for it? The Phoenix rollout of Very high bit-rate Digital Subscriber Line (VDSL) was supposed to boost not only

the speed of users' Internet connections but also the fortunes of Rohnert Park, Calif.based Next Level Communications Inc. {Nasdag:NXTVI.

Next Level — originally part of General Instrument Corp., which was acquired by Motorola Inc. [NYSE:MOT] in January — started down the VDSL road with a major contract from US West Inc. But US West has been absorbed by Denver-based Qwest Communications International Inc. [NYSE:Q], and there is

some concern that the company will focus more on the business Internet user, slowing VDSL growth.

"Following successful market acceptance testing, Qwest now finds itself in the second phase of its VDSL deployment plan," says Steven D. Levy, an analyst at New York-based Lehman Brothers Holdings Inc. "This phase requires that Next Level's VDSL system meet a high return-on-invested-capital hurdle rate." But until the second phase is completed at US West, Next

completed at US West, Next Level's largest customer, investors are taking a wait-andsee attitude.

Qwest Chairman and CEO Joe Nachio earlier this month said he plans to double the company's wireless and DSL customer base, adding that "all commitments to [VDSL] customers and partners will be satisfied."

Hardly a ringing endorsement from a company that accounted for 67% of Next Level's second-quarter revenue, though Next Level is watching this development. "Qwest/US West has not informed us of its plans for VDSL," says Peter Keeler, CEO and chairman of Next Level. "Any significant decline in revenues from US West would have a material adverse effect on our operating results."

Next Level also supplies field-proven VDSL video to a customer base that includes Verizon Communications INYSE:VZJ, Bell Canada International Inc. [Nasdaq:BCICF] and Cablevision Systems Corp. [NYSE:CVC], as well as a variety of local calling carriers. Overseas, France Telecom [NYSE:FTE] plans to start field trials with the company's system in October. And other international carriers have signed on as well.

ESCH	WEEK	BORR		2 PM	CHANNE	CHAN
SOF	TWAI	E OFF	-4.096			
ASWX	149.12	11.00	Active Software	50.56		0.0
ADBE	159.25	47.53	Adobe Systems Inc. (H)	150 19		12.5
ARBA	183 34	29.96	Anha Inc.	157.69		1.8
AZPN	55.37	8.12	Aspen Technology Inc.	40.00		-14,7
ADSK	56 06	17.00	Autodesk Inc.	25.81		
AVID	25.56	8.75	Avid Technology	12.60		6.5
BAANE	16.25		Baan Co. N. V.	2.41		6.9
EMCS	86.62	16.12	BMC Software Inc.	20.0		0.3
8081	150 H7	21 18	Besinesss Objects S.A.	103.0		3.6
CON	27.62	12.81	Cadence Design Systems (H)	24.69		-9.4
CHKP	163/37	19.31	Checkpoint Software Tech. (h			
CTXS	122.31	14.25	Citrix Systems Inc	18.38		16.9
COSN	46.50	9.68	Cognos Inc.	40.38		3.3
CA	79.43	23.68	Computer Associates Int'l Inc			67
CPWR	40.00	7.50	Compuwere Corp	8.6		15.5
DCTM	106.00	14.62	Decumentum	59.13		-0.4
EFII	69.31	21.06	Electronics For Imaging	25.0		5.2
HNCS	130.00	34.62	Hnc Settwarn	67.9		6.7
HYSL	65.00	15.31	Hyperion Software	26.8		-5.7
IDXC	49.12	10.37	IDX Systems	15.75		1,5
INFA	110.87	22.50	Informatica Corp.	93.38		9.3
IFMX.	21.25	3.68	Informs Software Inc.	4.28		20 H
INTU.	90.00	22.68	intust	53.75		4.0
JKHY	54.50	16.12	Jack Henry Associates	43.13		7.3
JDEC	48.31	10.25	J.D. Edwards & Co.	23.3		-11.2
LGTOE	82 50	812	Legalo Systems Inc.	11.9		
MACR	120.87	39.06	Macromedia Inc.	75.5		22.9
MANU	105.50	9.06	Manugistics Group Inc.	105.50		14.7
MENT	23.87	7.75	Menter Graphics (H)	23.19		5.4
MSFT	119.93	80.37	Microsoft Corp	62 38		-25
NETA	37.18	16.25	Network Associates	21.75		
BMH	46.66	16.25	Network General	35.4		0.4
NOVL	44.56	7.87	Novell Inc.	9.4		-5.9
ORCL	92.93	18.28	Oracle Corp	78.50		-25
PMTC	35.93	7.37	Parametric Technology Corp.	11.38	1.19	9.5
PSFT	37.87	12.00	PeopleSoft Inc.		6.06	18.2
PIXR	50 37	31.31	Pisar	32.38		-1.9
RATL	64.75	13.56	Rational Software Corp.	63.38		9.5
RHAT	151.31	15.00	Red Hat Inc.	19.00		11.4
QSFT	98.12	18.00	Quest Software	61.50		9.8
SAP	85.93	32.50	SAP AG	57.13		
SCUR	29.62	2.50	Secure Computing Corp.			-15.2
SDRC	19.00	8.81	Structural Dynamics Research			
SYBS	31.00	10.18	Sybase Inc	23.69		-6.2
SYMC	81.52	30.43	Symantec Corp.	41.08		13.3
SNPS	75 62	25.93	Synopsis	35.94		
	28:37	10.00	Systems & Computer Technol			
TIBX	147.00	8.87	Tibco Software Inc.	74.56		12.6
TSAL	48.12	11.37	Transaction Sys. Architects	15 00		8.0
VRTS	174.08	25.83	Ventas Software Corp.	135.94		13.0
WIND	66.12	15.56	Wind River Systems Inc.	45.25	-2.50	-5.2

AT	91.81	47.75	Afitel Corp.	49.69	1.19	2.3
ANDW	42.06	11.18	Andrew Corp.	26.50	-6.13	18.8
	488.00	29.00	AT&T (L)	29.00	-3.38	-10.4
BCE	137.50	21.00	BCE Inc.	22.75	1.25	-5.2
BLS	53.50	34.93	Bell South	37.31	-0.63	-1.6
WHE	41.06	15.31	Cincinnati Bell Inc.	24.00	-1.81	
CMCSK	57.68	27.87	Comcast	35.19	1.81	-4.9
COX	58.37	32.31	Cox Communications Inc. (L)	32.56	1.06	
GSTRF	53.75	5.81	Globalstar Telecom Ltd.	9.31	2.00	
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MODD	200.00	38.07	Qualcomm	69.81	3.81	5.8
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FON	75.93	24.75	Sprint Corp. (L)	24.81	3.44	
	137.00	69.62	Telephone and Data Systems	106.31	16.25	
VIA	76.06	40.31	Viacom	56.75	8.94	13.6
WCII	66 50	15:37	Winstar Communications Inc.	(L) 15.81	-5.56	-26.0
WCOM	61.33	26.31	Worldcom Inc. (L)	26.86	2.31	-7.9

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AMSY.	44.37	14.00	American Mgt. Systems	18.00	0.06	0.3
AUD	64.43	39.06	Automatic Data Processing	62.38	1.63	-2.5
BSYS	79.50	41.37	Bisys Group Inc.	79.50	4.50	6.0
CATP	27,00	5.31	Cambridge Technology Ptnrs	5.31	-0.69	
CEN	29.12	14.75	Ceridian	26.19	1.64	5.2
CBR	29.81	8.62	Ciber Inc. (L)	8.63	-0.44	-4.8
080	57.25	17.43	Comdisco	20.38	4.00	16.4
CHRZ		7.75	Computer Horizons Corp. (L)	8.50	-0.13	11.4
	99.87	57.93	Computer Sciences	73.19	-6.25	-7.9
	109.94	51.18	Dst Systems Inc. (H)	109.94	5.13	4.9
	76.68	38.37	Electronic Data Systems	43.75	2.13	-45
	57.68		First Data Group	40.56		
FISV	60.19	24.12	Fisery (H)	60.19	4.38	78
		9.56	Gartner Group	12.88	-138	-9.6
KEA	35.00	15.87	Keane (L)	15.88	1.81	10.2
NDC	43.00	20.75	National Data	31.13	1.06	
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SYNT	20.93	7.87	Syntel Inc.	8.78	2.09	19.3
TECD	55.87	18.00	Tech Data	43.47	4.59	9.6
TENE	76.87	4.06	TenFold Corp. (L)	4.06	2.38	36.9
	20.82	14.12	Total System Services Inc.	17.13	0.44	2.6
TSAI	48.12	11 37	Transaction Sys. Architects	15.00	11.31	-8.0

COMS	119.75	12.50	3Cam Corp	14.25	-2.25	-13.6
ADCT	49.00	9.32	ADC Telecommunications Inc.	32.00	3.13	8.9
ANTO	61.25	20.43	Antec (L)	23.38	3.19	-12.0
CS	52.75	14.12	Cabletron Systems	31.81	0.81	2.5
CNEBF	6.43	1.06	Call-Net Enterpuises (L)	1.06	-0.47	30.6
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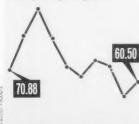
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36	ASME		20.46	ASM Enthography Holding		-2.86	8.7
-9.4	FCS	49.50	19.50	Fairchild Semiconductor Corp.		2.75	8.2
	HRS	39.37	15.50	Harris Corp.	25.19		
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3.3	KLAC	97.75	31.43			7.56	15.1
67		74.75	28.62	Linear Technology	62.96	1.38	
15.5		90.37	21.56	t Si Lugio	32 31	1.31	3.9
0.4	MXM	90.12	30.93	Maxim Integrated Products	76.25	1.75	
5.2	MII	97.50	29.12	Micron Technology	51.44	7.31	17.4
6.7	MOT	61 54		Motorola	30.69	4.38	
-5.7	NSM	85.93		National Semiconductor	19.94	4.50	-10.1
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9.3	SLR	49.81	26.25	Solection Corp.	45 00	2.83	5.5
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Microsoft

son, senior vice president of information services at The Talbots Inc. in Hingham, Mass.

Talbots uses three platforms: mainframes for its high-end systems, Unix for its Oracle Corp. databases and People-Soft Inc. human resource applications, and Windows for its desktops, e-commerce site and PC-based customer service system. Bucking slow adoption trends, the specialty retailer has even accelerated its Windows 2000 Server rollout so it can run new Web product development management applications and gain the benefits of the better-performing SQL Server 2000.

But when it comes to the new high-end Datacenter version of Windows 2000, Richardson said he can't envision replacing Unix systems or running the company's planned financial applications on anything but Unix.

"They're trying to make me go from three platforms to two. Perhaps at some point, two [platforms] would be less complex than three, so I think directionally they're correct," Richardson said. "But until [Windows 2000] is in a state that it has the reliability that I now expect out of the Unix environment, I'm just not going to be really open to making a full-blown commitment."

Christopher Smith, CIO at HomeLife Furniture Corp. in Hoffman Estates, Ill., went live with Windows 2000 in December and said he has encountered no problems with the Server, Advanced Server and Professional versions. But Smith said he doesn't need Windows 2000 Datacenter right now, since his company uses a Data General Corp. Non-Uniform Memory Access box that can scale to 128 processors for its largest applications.

Laura DiDio, an analyst at Giga Information Group Inc. in Cambridge, Mass., predicted that "it's going to be a slow, hard sell" for Microsoft as it tries to "hit Unix where it lives. Microsoft is going to have to

The Three Windows 2000 Server Operating Systems

Feature	WINDOWS 2000 SERVER	WINDOWS 2000 Advanced Server	WINDOWS 2000 DATACENTER SERVER
Processor limit	4	В	32
Memory support	4GB	8GB	64GB
Load balancing	No	Yes (32 nodes max)	Yes (32 nodes max)
Server clustering	No	Yes (2 nodes max)	Yes (4 nodes max)

* Datacenter Server will be sold only by qualified hardware vendors that have been certified to license and support it.

overcome the natural circumspection and aversion to change that these established Unix shops are going to feel and the natural cynicism about anything that says 'Microsoft' and 'high-end,' "she said.

No Delusions

Microsoft group manager Barry Goffe said his company "has no delusions of grandeur" that Unix customers will rip out their boxes.

"Most customers taking advantage of the .Net servers will be using them for new solutions," Goffe said, claiming that Microsoft has "seen the most excitement from customers building e-commerce applications." Microsoft has also gained "an enormous

amount of experience through our enterprise partners" running applications like enterprise resource planning and customer relationship management, he said.

One interesting piece of tomorrow's puzzle will be the electronic-business and integration story that Microsoft weaves about the .Net platform's various server packages in its. In addition to Windows 2000 Datacenter Server, Microsoft will discuss the integration, management and Web-enabling possibilities of its SQL Server 2000, Exchange 2000, BizTalk Server 2000, Commerce Server 2000, Application Center 2000, Host Integration Server 2000 and Internet Security & Acceleration Server 2000.

Goffe said Microsoft's broad and deep technology platform will let customers get up and running more quickly, "as opposed to our competitors, who offer a hodgepodge of technology that requires massive amounts of service dollars to deliver any-

thing that works."

"Not all of this is going to be shipping right away, but when you add all those together, those are a very important part of their story," said Tony lams, an analyst at D. H. Brown Associates Inc. in Port Chester, N.Y. "They're trying to offer an end-to-end solution, desktop to infrastructure.

"Even competitors admit [that] with the tools, the application server technology and the integration tools, it's a strong story for Microsoft," Iams said. "The knockout blow in the past has been, "What are you going to run it on?" That's why [it's important for Microsoft] to convince everyone that Windows 2000 gives you that strong foundation." •

Continued from page 1

Ford

in a matter of hours. The proprietors: the company's fiveperson quick-response executive IT support team.

According to James Yost, Ford's CIO, that team provided senior-level managers with what he described as "instant cyber-based capability" to manage the recall and replacement of the Bridgestone/Firestone Inc. tires the company believes lie at the heart of the rollover problem that has been implicated in more than 100 deaths in the U.S. alone.

The executive IT support team "scrambled" to set up that war room last month, with laptop computers plugged into the Ford worldwide network, Yost said. Since then, the team — which Yost said he considers "on duty 24 by seven" for the duration of the crisis — has

tapped numerous resources of the information technology department, including massive data centers designed to support the company's engineering and credit departments.

A key task was importing tire warranty data from Firestone to help Ford assess the role the tires played in the rollovers. Since Ford "historically never kept such data," Yost said, Firestone had to transfer it in a variety of ways, including everything from mainframe tapes to electronic file transfer to paper records, "which have been keyed in," said Yost in an interview with Computerworld in Austin, Texas, at the annual Dell Computer Co. Direct Connect user conference.

Firestone didn't respond to requests for comment.

Yost said the tire warranty database was key to unraveling the rollover mystery, which the company has repeatedly said in public statements relates to problems with particular models of tires Firestone produced for the Explorer. That raw data, Yost explained, helped the company zero in what Yost called a "subset" of information related to the Explorer tires. The executive IT support team, he said, can create such a massive database in a day.

While the executive IT support team has hands-on capabilities, Yost said, its real contribution to helping manage the rollover crisis has been its ability to tap into companywide IT resources. "If they don't have the capability, they can bring it in," he said. These resources include the company's large IT integration center, which is normally used to "stress, test and crash" systems but is now harnessed to help the senior IT staff support the rollover war room.

Steve Wilson, president of The Wilson Group, a crisis management consulting firm in Columbus. Ohio, said most

large companies today have facilities available where they can organize for major crises and set up direct access to the information they need to manage the situation. However, getting caught off guard when technology is available to avoid such a crisis raises questions about Ford's system and how it was used, Wilson said.

"I don't think a company today should get caught off guard," said Wilson. In the case of the Ford and Firestone tire crisis, the data should have been funneled into a central repository, Wilson said. "The question is whether they didn't have that capability, didn't use it or didn't interpret the data correctly. The technology is there so that this type of thing should not have gone undetected."

Michael Schiff, director of data warehousing strategies at Sterling, Va.-based Current Analysis, said neither company should have been surprised by the crisis. "They should have

been able to find out the commonalities concerning the defective tires and gotten a jump on this," said Schiff.

Schiff also said Ford and Firestone could have handled the customer relationship management aspect of the crisis, such as getting the information on the recall out to their distributors and direct consumers, much more efficiently, "They should be able to have immediately responded," he said. "The real question was, Did they have the incentive to do that?"

In addition, Joseph Marino, an Internet commerce analyst at Current Analysis, said there could have been serious problems with the information reporting chain. "The information is there, but it has to be reported," he said. "We don't know how many incidents were ever reported to the company or the National Highway Transportation Safety Administration," said Marino. "We just don't know.")

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FRANK HAYES/FRANKLY SPEAKING

Conventional IT wisdom

FEW THINGS IN IT REMAIN TRUE, DESPITE THE BEST efforts of vendor marketers, management gurus, industry analysts and *Computerworld* pundits to make everyone believe otherwise:

IT projects

advance

or die.

Sometimes

both.

- The Internet poses security risks. Always has. Always will.
- Users don't understand IT never have, never will. All they really understand is their jobs.
- No project gets enough time, budget and resources to be done the way it should be done.
- "Free" anything . . . isn't.
- Faster hardware is cheaper than faster software.
- Vendors and consultants are trying to make as much money from customers as possible. It's up to us to get our money's worth. Caveat emptor.
- The best technology doesn't always make a successful product. Then again, the best technology may not be what you need.
- Some vendors really don't like some other vendors — so much that they're willing to let it get in the way of working with customers
- If nobody else is trying something, there's usually a reason. Maybe not a *good* reason, but a reason.
- Faster hardware doesn't solve business problems — unless the business problem is slow hardware.
- The CEO will always think consultants' ideas are good because he's paying good money for them.
- Traffic expands to fill the bandwidth provided.
- If you take something away from users, they'll sneak it in the back way anyhow.
- The most powerful influence on CEOs' IT preferences are the people who write for airline in-flight magazines.
- "More bandwidth/memory/storage/processing power than you'll ever need" will last you six months. A year, tops.
- "We've never done it that way before" is a more powerful argument than any cost/benefit analysis.
- ■IT projects advance or die. Sometimes both. But if it isn't advancing, it's dying.

- Nobody ever got fired for buying the flavor of the month
- What counts isn't how much a product costs when you buy it. What counts is how much it costs before you finally shut it down.
- Functionality isn't the same as usefulness.
- When you just have a hammer, everything looks like a nail. Most IT people just have technology.
- It always takes longer and costs more to fix it later.
- The systems that last are the ones you were counting on to be obsolete.
 - A good idea is no match for a bad habit.
 - By the time your CEO has read about a technology, it's no longer a strategic advantage.
 - Ninety percent of a system's cost is still training people to use it.
 - IT projects fail. Large projects fail more often than small ones. So if failure isn't an option, you'll never do anything.
 - If you think your company's users are awful, just wait till you're on the Web and have customers of your own.
 - Exactly what you want always costs more than what you can afford whether it's technology or IT employees.
 - Old ideas got that way because they proved useful.
 - Data isn't information. Information isn't knowledge. Knowledge isn't manageable.
- Systems aren't made from metaphors, paradigms and methodologies. They're made from code, wires and hardware.
- The Model T didn't become a standard because it was the best. It became a standard because it was the cheapest.
- The hardest problems get solved last. ▶

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SHARK TANK

THE GOOD: Non-IT pilot fish with a corporate support contract calls a PC vendor after a hard-drive crash. Tech support offers to talk her through replacing it over the phone. Why not, the fish figures, if it'll save everyone time and money? But after two weeks, three drives from the vendor and checks of every cable and setting, the PC still won't boot. Finally, a senior support rep takes the case, and thinks to ask a critical question: "Did anyone tell you that the drives are shipped unformatted without partitions and with no operating system?

THE BAD: Non-IT manager insists she should have input into IT buying decisions because of her "extensive technical background," reports a pilot fish. The manager proceeds to write up requisitions for moderns and printer switch boxes for workstations and printers that are about to be installed on the network, then asks a consultant brought in for an informational meeting, "What exactly is the difference between Windows 3.1, Windows 95 and Windows NT?"

THE UGLY: Administrative manager at a manufacturing compa-

ny has hard-disk problems, and no wonder – he hangs notes on the side of his computer case with magnets. "We told him to get rid of the magnets," says an IT pilot fish, but they keep showing up – and so do disk problems. "We solved the problem by changing his case to a tomatored plastic job," says the fish. "We told him it was to color-coordinate his PC to his red rug."

EXECUTIVE ASSISTANT pilot fish is the de facto IT go-to-gal for her department, where some new employees have never touched a PC. One such new hire looks more promising than most: "She took really good notes and I thought. OK, this one might be all right," says the fish. Until the new hire comes to the fish in a panic - she's lost her notes and can't figure out how to log on to Windows NT. Groans the fish, "It tells you exactly what to do right there on the screen: Press Control + Alt +

Talk to the Shark: sharky@ computerworld.com. You get a sharp Shark T-shirt if your tale sees print in the weekly feeding frenzy – or turns up online at computerworld.com/sharky.

The 5th Wave



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